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Serving Her Country

An Analysis of Women's Enlistment

James R. Hosek, Christine E. Peterson

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—Using data drawn from a 1979 Department of Defense survey of enlistees and the 1979 wave of the National Longitudinal Survey of Youth Labor Force Behavior, this report examines one aspect of women's military service--the factors affecting the flow of new recruits. The analysis uses models of both individual willingness to enlist and the allocation of recruiter effort to enlist women and other groups. These models, estimated with a microdatabase containing many individual and local market variables, make it possible to circumvent the distorting effects of the overall demand constraint that has, in the past, jeopardized aggregate data analyses of women's enlistment. The authors compare the options and behavior of women with those of men. For example, they consider whether labor market forces influence young men and women differently; the ways in which marriage expectations affect the enlistment decision; whether the role of education expectations differs between the two sexes; and what impact local labor market conditions have on the individual's enlistment outcome. The research suggests that there are strong similarities between men and women in the factors influencing their enlistment decisions. (E C)

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PREFACE

The challenge of maintaining the quality and capability of the volunteer force continues. Although the nation has successfully met this challenge during the 1980s, it remains important to learn more about the determinants of enlistment. In the course of research two classes of enlistment models have evolved. The more common models use aggregate data and typically support near-term forecasting exercises, and the less common involve person-level data and seek insight into the behavior of individuals and recruiters engaged in the enlistment process. In this regard, the contribution of RAND's work on individuals lies in its specific findings on determinants of enlistment and, implicitly, the influence of recruiters.

Focusing on women, the present study builds on past research that treats an individual's enlistment decision in the context of occupational choice, and adapts other work that focuses on the role of the recruiter as a mediating agent in recruiting. The analysis is concerned with the definition of appropriate recruiting market segments, the role of education expectations, and the effect of family background and employment-related variables. The role of marriage plans is included, and, in emphasizing the recruiter's role in the enlistment equation, a series of variables on the local market is added.

The findings should be of interest to the defense manpower policy community in general, persons interested in the role of women in the military, and those concerned with the behavior and outcomes of women in comparison to men. Related RAND reports by the same authors include:

Enlistment Decisions of Young Men, R-3238-MIL, July 1985

Educational Expectations and Enlistment Decisions, R-3350-FMP, March 1986

Military Enlistment and Attrition: An Analysis of Decision Reversal, R-3510-FMP, June 1987

This research was sponsored by the Office of the Assistant Secretary of Defense (Force Management and Personnel). The report was prepared within the Defense Manpower Research Center, part of RAND's National Defense Research Institute, a federally funded research and development center sponsored by the Office of the Secretary of Defense and the Joint Chiefs of Staff.

SUMMARY

BACKGROUND

The role of women in the services has increased dramatically in the past 20 years. Women now constitute 10.8 percent of active duty enlisted personnel, up from 1 percent in 1970, and during the past few years one out of every eight new recruits has been a woman. Enlisted women are prominent in communications, intelligence, medical, administration, service and supply, and other technical specialties, and the number of military occupations open to women continues to edge upward, although combat and combat-related positions remain closed. Moreover, there may be interest in still further expansion of women's role in the military stemming from several factors: their demonstrated competence in training and on duty, Congressional and societal pressure to increase women's opportunities, and the fact that women represent a significant additional source of high quality recruits. Yet women's future proportion in the ranks also may depend on force cuts triggered by the end of the Cold War.

Little is known about the determinants of women's enlistment. The few studies of women's intentions to enlist find that women uniformly have lower intentions to enlist than do men, although like men, women with positive intentions are more likely to enlist subsequently than are women with negative intentions. But the value of intentions studies is limited because two-thirds of women recruits come from the *negative* intentions group, as do half of men recruits. Intentions alone cannot explain enlistment behavior. Indeed, changes in enlistment factors can affect the predictive accuracy of intentions by changing the population distribution by intention or the enlistment rate for a given intention. Therefore, regardless of whether intentions are positive or negative, it is important to know the underlying factors that influence enlistment.

Women have not been featured in the host of enlistment studies done with aggregate data. The reason is that women are likely to be demand constrained—more want to enlist than are permitted to do so, although we do not know to what extent—and as a result any attempt to estimate women's enlistment supply with such data would produce distorted results. We use data on individuals and argue, in contrast, that these data mitigate the demand constraint problem.

THEORY

In our work the same theoretical approach applies to both men and women. In deciding whether to enlist, a person evaluates the military against the alternatives of further schooling, market work, or some combination of the two. Marriage and family plans can also figure into any of the options. Thus, person-level factors expected to affect the enlistment decision include academic ability, the ability to finance further education, earnings and employment opportunities, education plans, and marriage plans. The enlistment decision depends in addition on recruiter effort, as the recruiter is a source of information about the military and acts to facilitate the enlistment process.

Recruiter effort depends on recruiting goals, incentives to reach those goals, and effort required per additional recruit. Recruiters in better markets should be able to produce the same number of recruits with less effort. Recognizing this, the recruiting command will assign higher goals and appropriate incentives to those recruiters, as a means of sustaining their level of effort. Further, we expect goals, incentives, and effort per recruit to be related to variables describing local market recruiting richness. We therefore proxy recruiter effort with a set of variables that reflect market recruiting richness: per capita income, economic growth, unemployment, enlistment eligibility of the youth population, and competitiveness among inexperienced workers.

These local market variables may also have a direct effect on the individual's enlistment decision. For instance, an unemployed person may be more likely to enlist if the local unemployment rate is high, and anyone might be less likely to enlist if the local economy is healthy (high per capita income) or growing (positive change in per capita income over time). The implication is that local variables' effects can represent effects related to recruiter effort and effects related to individual decisions apart from recruiter effort.

Given the similarity in theoretical treatment, it is still important to recognize that recruiting goals for women are much lower than for men. This can create a situation of demand constraint and the rationing of available openings, but we think this will not be as severe a problem at the micro level as at the macro. First, lower goals mean that the recruiter will choose to allocate less effort to women, and to the extent that the recruiter influences the enlistment decision, the reduced effort will itself reduce the supply of women. As a result, there is less chance that the demand constraint will bind. Second, the individual recruiter's goals are "soft" constraints, and recruiters typically exceed or fall short of their goals for different kinds of recruits in a month. It is the aggregate constraint that must not be exceeded.

Third, to the extent rationing occurs, it may be based on factors unrelated to those included in our model. For example, the person-level and market-level variables have little to say about a person's occupational preferences, adaptability, and taste for service; furthermore, despite the recruiter's efforts, a woman might decide not to enlist because of the limited range of open occupations and the long wait for certain training seats.

FINDINGS

We employ a choice-based sample constructed from two separate samples taken in spring 1979. The 1979 Armed Forces Entrance and Examination Station Wave I Sample provided data on enlistees, and the 1979 National Longitudinal Survey of Youth Labor Market Behavior provided data on nonenlistees. Separate multivariate analyses were made for seniors and nonstudent high school graduates (graduates, for short), for men and for women ages 17-22. We used a logistic functional form to model the enlistment probability.

Overall, we find that for most variables the coefficients are statistically equivalent for male and female seniors and for male and female graduates. Therefore, men's and women's enlistment decisions depend on the same factors and often in the same way.

Still, some differences between men and women were found:

- The estimated intercepts in the women's equations are smaller, which is consistent with their lower recruiting goals.
- The effects of labor force related variables are often smaller for women than for men, perhaps reflecting a weaker labor force commitment among women as well as greater difficulty in finding satisfactory employment.
- Relative to those with no immediate marriage plans, women who plan to marry within five years are less likely to enlist, but not so for men. Men who are married or plan to marry in the next five years are more likely to enlist than men who plan to marry after five years.

For men and women, there are definite differences between seniors and graduates. Education-related variables tend to be more important for seniors, whereas work-related variables tend to be more important for graduates. This pattern arises partly because graduates are a selected population who chose the civilian labor market. For instance:

- Generally, persons with greater academic potential and ability to finance further schooling or job search are less likely to enlist. These patterns are stronger for seniors than for graduates. Seniors who expect more education are *less* likely to enlist, whereas graduates who expect more education are *far more* likely to enlist. These graduates might not have been able to afford more education when seniors, or perhaps they thought private sector opportunities would be superior to the military, but experience has not borne out those expectations.
- The seniors' wage effect is negligible, but the wage effect for graduates—men and women—is significant and has an elasticity of -1.0. Moving from a \$5.00/hour to a \$5.50/hour job would reduce the enlistment probability by 10 percent, a large impact.

Blacks are more likely to enlist, other things equal. But anyone—white, black, or Hispanic—is less likely to enlist if the *county population* has a high percentage of blacks, at least in our 1979 sample. This could be because the recruiter effort required per recruit is greater for some reason in such counties, or perhaps because lower recruiting goals were set in light of the lower fraction of youth apt to be eligible. Blacks scored well below whites and Hispanics on the 1980 Armed Services Vocational Aptitude Battery administered to a national sample of youth.

Many of the market richness variables proved to be significant in determining whether an individual enlisted. For example, enlistment is lower in high per capita income counties and is related to recruiter search costs. The county unemployment rate combined with the individual's employment status had a significant effect: jobless persons in high unemployment counties were more likely to enlist. Competitiveness among inexperienced workers was measured by the percentage of the county labor force made up of women. A higher percentage of women should reflect a more competitive market for youth—more applicants per job opening, lower wages, and a greater likelihood of being dismissed—making the military more attractive. The effect of this variable on enlistment is always positive.

IMPLICATIONS

The variables found to explain men's enlistment also apply to women, and many times their effects are nearly the same. This suggests that the enlistment incentives, recruiting techniques, and advertising strategies that work for men would also work for women. Similarly, the supply of women can be expected to fluctuate in

response to movements in wage rate and employment conditions in the private sector, as does men's supply. Future research is nevertheless required to determine the actual responsiveness of women to recruiting initiatives. Although experiments involving expanded occupational openings, educational benefits, or bonuses could be costly to arrange, it would be relatively easy to conduct an experiment varying women's recruiting goals across the country. Holding the overall goal constant, goals in certain areas could be reduced, others increased. Such an experiment would provide information about the importance of recruiter effort in recruiting women.

The recruiting community often tracks recruiting conditions via the proportion of youth reporting positive intentions to enlist. Although intentions are a valid bellwether of future recruiting conditions, one should not forget that roughly half of all enlistments come from the negative intentions group. Our analysis provides information on many underlying determinants of enlistment apart from intentions. Shifts in key variables identified in our analysis can have major effects on enlistment trends. We see now that these determinants are similar for men and women. We suggest that an effort be made to monitor these variables similar to the effort made to track intentions.

Finally, several local market variables shown to be significant in our analysis typically have not been included in aggregate data studies of enlistment but could be. These variables include per capita income, relative number of seniors and recent graduates, and the percentage of women in the labor force. Our analysis also offers insight into why aggregate studies might estimate a negative relationship between the percentage black and the enlistment rate, even though one might expect a positive relationship on grounds that the services offer relatively better training and career opportunities than many blacks find in the private sector. Our results draw attention to the importance of analyzing goals and recruiting resource allocation along with enlistment itself. Although these variables can be taken as given at the micro level, they deserve explicit attention in aggregate analyses.

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I. INTRODUCTION

The topic of women's enlistment in the military has been little studied. This lack of attention may stem from several reasons, perhaps the foremost being that women constitute a small percentage of the active duty force, 10.8 percent as of the end of 1989. Not surprisingly, policy and research interest has concentrated on the recruitment of high quality males, the mainstay of the enlisted force. Further, there exists doubt that women's enlistment supply behavior can be studied because their enlistment is presumably demand constrained: more women want to enlist than can do so at prevailing compensation levels and eligibility conditions, hence attempts to estimate women's enlistment supply would by this logic be condemned to produce distorted results.

Even though policymakers have few women's supply studies to draw upon, there has been periodic concern about the potential availability of women to serve. During the phase-in of the volunteer force in the mid-1970s, women and prior-service males were widely viewed as a buffer in case of shortfalls in nonprior-service male recruiting. In the mid-1980s, policy discussion addressed the issue of why the rate of increase of women in the services had slowed from the rapid pace witnessed during the 1970s, and the Air Force in particular was urged to recruit more women or show cause that it was imprudent to do so. A multivolume report resulted, as did a working agreement with Congress committing the Air Force to move upward from the mid-teens toward a goal of 20 percent female enlistees (U.S. Air Force, 1985).

Interest in the military role of women may build again, from several sources: from the persistent influence of the Defense Advisory Committee on Women in the Services (DACOWITS); as a side product of the expanding role of women in the national economy, where women increasingly hold positions requiring considerable training, capability, and leadership; and from the possibility of a recruiting crunch in the early 1990s. Diminished youth cohort sizes, declines in relative military pay, and subsequent declines in first- and second-term retention could increase the demand for new accessions just as the supply pool has shrunk to its post-Vietnam minimum.

This report examines one aspect of women in the military—the factors affecting the flow of new recruits. However, we base our analysis on models of both individual willingness to enlist and the allocation of recruiter effort to enlist women and other groups. These models, estimated with a microdata base containing many individual and local market variables, provide an opportunity to circumvent the distorting

effects of the overall demand constraint that, as suggested above, has jeopardized aggregate data analyses of women's enlistment. Moreover, we provide not only an empirical investigation of the factors influencing enlistment, but a description of broader trends and variables bearing on women's decisions to include the military as a career option. We review selected literature on women in the military and recount changes in women's private sector opportunities over the recent past.

Throughout the report, in the descriptive material and especially in the empirical analysis of women's enlistment, we compare the options and behavior of women to men. Men, while not an experimental control group, form an important basis for comparison--we want to know where differences in enlistment determinants exist by gender and, if possible, why. For example, do labor market forces influence young men and women differently; how do marriage expectations affect the enlistment decision; does the role of education expectations differ between the two sexes; and what impact do local labor market conditions have on the individual's enlistment outcome?

Our data are drawn from a 1979 Department of Defense survey of enlistees and the 1979 wave of the National Longitudinal Survey of Youth Labor Force Behavior. These two surveys together provide us with rich demographic and socioeconomic background data on both enlistees and nonenlistees at the same point in time. Although the data date from 1979, the most difficult recruiting year yet experienced under the volunteer force, our literature review and empirical results convince us that most of the lessons from 1979 remain valid today. We include a good deal of information that should enable the reader to make this judgment independently. If anything, the results from 1979 suggest the value of new data to support more current yet presumably confirmatory analyses.

The future role of women in the military does not depend on enlistment supply alone. Any serious reconsideration of their role must also delve into the determinants of women's requirements. That additional work lies beyond the scope of this study.

The report is organized as follows. Section II reviews the literature, and Sec. III provides relevant background information on such items as women's enlistment eligibility, occupational distribution, enlistment incentives, private sector earnings, college attendance, and marriage trends. Section IV describes our conceptual approach, explaining why microdata permit insight into women's enlistment supply behavior even in the presence of a macro constraint on their enlistment. Results of the multivariate analysis of individual enlistment appear in Sec. V, where we estimate separate models for men and women and compare their coefficient structures. The conclusion is presented in Sec. VI.

II. LITERATURE REVIEW

OVERVIEW

Our review of recent literature on women in the military covers diverse material, including trends of women as a percentage of the force, on-the-job performance, the importance of the gender ratio, women's versus men's intentions to enlist, and others.¹ By reaching beyond the specific topic of enlistment, the review should offer a fruitful context within which to view and relate our work. The next few paragraphs give the thread of the review, and then we turn to individual studies.

From 1948 to 1970, women composed about 1 percent of the active duty force; during the volunteer force era their percentage had climbed to 8.5 by 1981 and stands at 10.8 percent today. Pressure to increase the role of women in service intensified in the late 1970s, paralleling the growing prominence of women in the national economy and reflecting the grave concern, at least among some, that by the mid 1980s the nation's military would not be able to meet its high quality recruit goals without recourse to more women. Among NATO countries, the United States is most reliant on women.

Women are prohibited by law and policy from serving in combat positions or positions exposing them to substantial risk of injury or capture. Most military women serve in administrative, clerical, medical, communications, and intelligence specialties. Of these, medical (especially nursing) contains the greatest risk of exposure to combat situations. Women on duty may initially be met with skepticism about whether they can perform their tasks effectively and reliably, but doubt dissipates as proven experience accumulates. Evidence, although limited, suggests that women perform as well as men for given specialties. In addition, women's attitudes about the opportunity structures and power structures they face in the military do not necessarily differ from men's as a function of the group sex ratio (the extent to which women are a minority). Skill transfer from military training and experience to civilian employment appears similar for men and women.

With respect to women's enlistment, many studies assess women's propensity to enlist by means of survey information on enlistment intentions, an approach validated by research showing that persons

¹References to studies mentioned in the overview are supplied in the following subsection.

with positive intentions are more apt to enlist. Intentions studies uniformly find women to have substantially less positive intentions than men, suggesting that women have a smaller enlistment supply.

An inherent limitation of intentions studies is that intentions do not necessarily convert into actions. Many persons with positive intentions do not enlist, whereas many persons with negative intentions do enlist. Nearly half of male enlistees and nearly two-thirds of female enlistees come from negative intentions groups. Therefore, even though intentions have predictive power, it is imperative not only to have a model incorporating other factors as well, but one that also focuses on outcomes such as testing and enlisting rather than on intentions alone. [The Armed Services Vocational Aptitude Battery (ASVAB) is a prerequisite to enlistment.]

Survey data show that men are over three times more likely to test than women, again suggesting a smaller enlistment supply for women. Still, testing rates like enlistment rates may be governed by the recruiter rather than simply by individual choice. Further, of women who test, approximately one-third enlist versus about half for comparable males. This difference in conversion rates seems due to women's more stringent height/weight standards and narrowed occupational choice.

SPECIFIC STUDIES

Pressure to expand the number of servicewomen grew in the mid 1970s both as the role of women in the national economy became increasingly prominent and as the services struggled to maintain male recruit quality. A 1977 Brookings Institution study projected that by 1982 the services would be a quarter short of their high quality male recruiting goals and further estimated that "the number of military enlisted women could eventually reach 400,000, or 22 percent of the force" (Binkin and Bach, pp. 68, 109). Some argued for legislative changes to broaden the range of military occupations open to women,²

²Statements of Major General Jeanne M. Holm and of Carol C. Parr, U.S. Government (1978), pp. 102-107. The following quote from Parr illustrates the fervor of that policy debate. "We urge Congress to address these issues: Is it necessary for the Armed Forces to continue to be more than 90 percent male? Are the military services being overly cautious in their reluctance to admit more women? Is there any rational basis for the fear that increasing the utilization of women will impair the accomplishment of missions? Are the Army, Navy, and Air Force underestimating the capabilities of American women?" (p. 103).

whereas others urged immediate full integration of women.³ For a brief review of articles from the 1970s, see Hunter et al. (1978). A subsequent public airing of issues concerning women's role in service, especially their suitability for combat positions, may be found in "Women in the Military" (U.S. Government, 1981).

No NATO country currently conscripts women, although all but five conscript men [the exceptions are Canada, Iceland, Luxembourg, the United Kingdom, and the United States (Stanley and Segal, p. 582)]. With regard to women as a percentage of total active force in 1986-87, the United States led with 10.2 percent, followed by Canada (9.2 percent), the United Kingdom (6.1 percent), Belgium (3.9 percent), France (3.7 percent), and Denmark (3.0 percent). The Federal Republic of Germany, Greece, Luxembourg, the Netherlands, Norway, Portugal, and Turkey each had less than 2 percent, while women were excluded from service in Italy and Spain; and Iceland, with no formal military, had no women (Stanley and Segal, p. 563).

Legal statutes enacted in 1948 restrict women from combat in the Navy, Marine Corps, and Air Force, but not the Army. However, all services have policies restricting women from combat hazards. "Marine Corps policy prohibits assigning women to units most likely to engage in direct combat activity. . . . Air Force policy restricts women from performing certain duties that might involve a high risk of capture or injury in the event of war . . . [Navy] women may be assigned on a permanent basis to noncombat auxiliary and support ships, aviation training and support squadrons, ground support functions, and shore-based aviation squadrons. . . . Army policy excludes them from serving in units or positions coded as those with the highest probability of combat involvement." (Stanley and Segal, pp. 577-578.) "Basic training for enlisted women differs from men's in physical training, hand-to-hand combat, and some weapons instruction. And there is greater emphasis on military rather than combat skills. After basic training. . . enlisted female personnel receive the same training as male counterparts." (p. 579.)

Horne (1987) analyzed women's performance through the relationship between Skill Qualification Test (SQT) scores and the following

³Testimony of Jill Laurie Goodman, U.S. Government (1978), pp. 75-89, p. 126 *passim*: "The number of women entering the military is determined by the military itself. The military has very strict quotas . . . [The slowed growth in the percentage of women entering the armed services] is a direct result of the problems that come from partial integration of women into the armed services, where, for example, women are accepted into the Navy and then told they cannot go aboard ships. They are accepted into the Army and told they cannot fight. They are accepted into the Air Force and told they cannot fly. . . . I see the answer as full integration."

explanatory variables: Armed Forces Qualification Test (AFQT) score, high school diploma, gender, white/nonwhite, test taken in the same military occupational specialty as the person trained in, and months in service. Of nine specialties analyzed, five might be viewed as nontraditional jobs for women: radio teletype operator, cannon crewman, light wheel vehicle and power generator mechanic, motor transport operator, and military police. The remaining four—stenographer, finance specialist, personnel administration specialist, and unit supply specialist—are more traditional. Other things constant, women's scores were significantly lower than men's among the nontraditional specialties by 3.54 to 9.03 points. (Average SQT scores in this study ranged from 70 to 75 with a standard deviation of about 10.) Among the more traditional specialties, the women's scores were slightly higher, by about a point, but the differences were not statistically significant. The number of women observed in the five nontraditional specialties was probably quite small, although no counts were given. Therefore, small sample problems may be present in comparing these male and female SQT scores. In addition, the test population consisted of E-5s (personnel who had been in service typically over four years), but no adjustment was made for attrition or, particularly, for the possibility that attrition might have differentially affected women.

Dunivin (1988) analyzed almost 22,000 Air Force officers' attitudes in five career fields: pilot, air traffic controller, personnel, administration, and nurse.⁴ She framed her analysis with Kanter's (1977) model, which assumes that workers' behavior and attitudes depend on organization factors. By implication, men's and women's behavior would differ not because their work-relevant characteristics are disparate but because they face different opportunity structures, power structures, and relative numbers (group to sex ratio). Dunivin examined attitudes toward those three factors, and her results show no male/female differences for pilot and air traffic controller, modest differences for nurse (women rate job quality, a component of opportunity structure, higher than do men), and significant differences (at a 1 percent significance level) for personnel and administration where men have more positive attitudes. Thus the results "did not support Kanter's thesis that women in more skewed proportions have different attitudes than men who comprise the dominant majority" (pp. 78-79). Dunivin concludes that whatever the effect of group to sex ratio, attitude differences appear related to whether the work is traditional or nontraditional.

⁴The study contained 2700 female officers. The percentage of women within each career field varied from 1 percent among pilots to 15-20 percent among air traffic control officers and personnel officers, to 30 percent for administrators, and to 77 percent for nurses. The attendant female sample sizes were 32 pilots, 14 air traffic controllers, 126 personnel officers, 167 administrators, and 1010 nurses.

However, Waite and Berryman (1986), studying both civilian sector and military occupations, found a small, negative, statistically insignificant effect of job traditionality on first-term turnover in military occupations. They also found no evidence of higher turnover among women in nontraditional occupations in the civilian sector.

Legislation enacted in 1976 mandated the admission of women to the Department of Defense academies—Army, Navy, and Air Force—and the Coast Guard Academy immediately followed suit. The experience of the first classes of women enrolled in the military academies is described by Stiehm (1981), Buckley (1977), and Durning (1978), plus articles cited by those authors. Rottman (1985) addresses the post-academy experience of female Coast Guard officers. These women perceive themselves to be effective officers, she finds, but their experiences vary. Whether a woman officer was "supported or discriminated against" depended on the "attitudes and behaviors of the ship's CO and executive officer (XO)—more than the job, the size of the ship, or any characteristic of the women" (pp. 264-265). In addition to establishing professional careers, women found considerable challenge and difficulty in building their social and personal lives, for example, in balancing career duties with aspirations to marry and raise a family. One can expect enlisted women as well as women in the civilian sector to face similar problems.

Devilbiss (1985) describes her experiences as a participant-observer in a combat exercise involving her combat support unit. Although men in the unit initially made its women members conscious of being different, the many shared experiences and responsibilities of unit members contributed to the formation of "buddy"-type bonding and unit cohesion. The author concludes that women in this unit did not detract but enhanced its readiness through their skills, ability, and willingness to perform.

Even though women have been excluded from combat by law and policy, a woman enlisting could, depending on the occupation she enters, expect to find herself in a combat situation. A Veterans Administration survey of women veterans found that 10.3 percent were in or near combat action in World War II, 8.1 percent in the Korean War, and 4.4 percent in the Vietnam era (Dienstfrey, 1988, p. 554). Army nurses have had the highest incidence of combat exposure.

Military training seems about equally applicable to civilian employment for both sexes. Mangum and Ball (1987) show that the extent of skill transfer from military training to post-military employment is similar for men and women. They measure whether skills learned in

military training were used on the post-service job.⁵ If anything, skill transfer appears slightly higher for women, probably reflecting the fact that men are more likely to serve in combat-related specialties having a lower transfer rate.

Turning to attitudes toward the military and intentions to enlist, Thomas' (1984) results suggest that pro-service attitudes appear likely to develop in military families, as indicated by the higher enlistment rate among young men and women whose parent(s) are career military personnel. In 1979 about 5 percent of young men and young women in the general population had military career parents—the mother or father had at least 10 years of service—whereas 14 percent of first-term men and 16 percent of first-term women came from such families (pp. 298, 307). Incidentally, Thomas also found women's military entry age to be 1.25 years greater than men's (p. 309).

Bachman, Sigelman, and Diamond (1987) depict a positive association between pro-military attitudes and an intention to serve in the military. The authors contend that the values common among military personnel—nationalism, conservatism, patriotism, authoritarianism, for example—originate primarily from the selection process of joining a service rather than from in-service experiences. Their dataset combines surveys of high school seniors undertaken annually over the period 1976 through 1985. The data contain information about the intention to enlist and expectations about having a career in the armed forces, as well as five-point scales of perceived military job opportunities, perceived fair treatment in service, and other items. We extracted Table 2.1 from their Tables 1 and 2 (pp. 175–176).

From Table 2.1 we see that only 7 percent of female seniors have positive intentions to serve versus 23 percent for male seniors. Also, attitudes toward military job opportunities and fair treatment in the military increase with the strength of intention to serve, as one might expect. But paradoxically, women almost uniformly rate the military higher (although no tests of statistical significance were reported) than do men on job opportunities and fair treatment even though 93 percent of women do not intend to serve. This may be because young women rate military work "abstractly and impersonally rather than considering it as a field they themselves might enter" (p. 179).

In any event, the paradox reflects a common limitation of attitude data: intentions often do not translate into actions. Thus, Bachman et al.'s thesis that the values of service personnel derive from pre-

⁵Occupations from individuals' post-military employment histories were matched to their military occupational specialties (MOSs) using a Department of Defense crosswalk. A positive skill transfer occurred whenever there was a match between the individual's MOS and any civilian occupation he or she held after leaving the military.

Table 2.1

**HIGH SCHOOL SENIORS' INTENTIONS TO SERVE, ATTITUDE TOWARD
MILITARY JOB OPPORTUNITIES, AND ATTITUDE TOWARD FAIR
TREATMENT IN SERVICE, BY SEX**

Intention to Serve Category		Intentions ^a (Percent)		Military Job Opportunities ^b		Fair Treatment in Service ^c	
		Men ^d	Women ^d	Men	Women	Men	Women
1. Definitely won't serve	77.1	41.9	74.2	2.53	2.99	2.16	2.43
2. Probably won't serve		35.2	19.1	93.3	2.50	3.16	2.32
3. Probably serve, no career	13.6	6.1	1.6	2.96	3.43	2.49	2.73
4. Probably serve, career uncertain		5.6	2.0	4.8	3.19	3.55	2.67
5. Probably serve, career expected		1.7	1.2	3.36	3.66	2.82	2.93
6. Definitely serve, no career	9.2	1.6	0.3	• •	3.59	2.74	2.78
7. Definitely serve, career uncertain		4.1	0.7	1.9	3.50	3.52	2.90
8. Definitely serve, career expected		3.5	0.9	3.94	3.94	3.18	3.14
Percent/mean		100.0	100.0	2.82	3.05	2.35	2.48

^aEntries are averages based on the range of the number of cases responding to the items analyzed in Bachman et al. (1987).

^bAn index of five items: "To what extent do you think the following opportunities are available to people who work in the military services? A chance to get ahead, a chance to get more education, a chance to advance to a more responsible position, a chance to have a personally more fulfilling job, a chance to get my ideas heard" (1 - to a very little extent; 3 - to some extent; 5 - to a very great extent).

^cAn index of two items: "To what extent is it likely that a person in the military can get things changed and set right if he is being treated unjustly by a superior?" (1 - to a very little extent; 3 - to some extent; 5 - to a very great extent). "Do you personally feel that you would receive more just and fair treatment as a civilian or as a member of the military service?" (1 - much more fair as a civilian; 5 - much more fair in the military service).

^dAll men and women are high school seniors, 1976-85.

service attitudes among those with stronger intentions to enter service is challenged by Orvis' (1986) finding that the majority of female enlistees come in fact from *negative* intentions groups, as do nearly half of the male enlistees. Bachman et al. lack information on subsequent enlistment for their respondents so cannot compute comparable percentages.

Testing and enlistment differ substantially by enlistment intentions category.⁶ Table 2.2, based on Youth Attitude Tracking Study (YATS) data, shows that persons with definite or probable intentions are more likely to test and enlist than those with negative intentions. Comparing women to men reveals far fewer women with positive intentions—13 percent versus 32 percent for men—thus, there are fewer women predisposed to enlist. Nevertheless, women with positive intentions account for 35 percent of test takers and 33 percent of enlistees, whereas the positive intention men comprise 52 percent of test takers and 55 percent of enlistees (Table 2.3).⁷

Table 2.2

PERCENTAGE OF FEMALES AND OF MALES AT EACH INTENTION LEVEL
(1980, 1981), PERCENTAGE WHO HAD TESTED BY MARCH 1984,
PERCENTAGE WHO HAD ENLISTED BY MARCH 1984

Enlistment Intention	Females			Males		
	Percent Population	Percent Testing Given Intention	Percent Enlisting Given Intention	Percent Population	Percent Testing Given Intention	Percent Enlisting Given Intention
Definitely	1.6	29.8	9.2	5.0	42.2	25.0
Probably	11.7	10.7	3.7	26.7	26.2	12.2
Negative	86.8	3.7	1.3	68.3	12.2	6.4
Total/average	100.0	4.9	1.7	100.0	17.4	8.2

SOURCE: 1980, 1981 Youth Attitude Tracking Study, DMDC accession files (MEPCOM).

⁶Tables 2.2 and 2.3 are adapted from Tables 7 and 8, *Propensity of Young Women to Enlist in the Military*, Report to the House and Senate Committees on Armed Services, prepared by Office of the Assistant Secretary of Defense (Manpower, Installations, and Logistics), March 1985; hereafter referred to as OSD Report, 1985. Data sources are the combined 1980 and 1981 Youth Attitude Tracking Studies of 17-21 year olds together with Military Entrance Processing Command (MEPCOM) files. Negative respondents answered "probably not," "definitely not," or "don't know." These are the same data underlying Orvis (1986).

⁷OSD Report (1985) also presents intentions information and subsequent enlistment outcomes for two other surveys—the National Longitudinal Survey of Youth Labor Force Behavior (NLS) and the High School and Beyond (HSB) survey. In both surveys, men are roughly 2.5 times more likely than women to have positive enlistment intentions, and again persons with positive intentions are more likely to enlist than those having negative intentions. Still, because the negative intentions groups are so large they contribute major portions to enlistees. For NLS respondents ages 16-21 inclusive in 1980, nearly "two-thirds of female enlistments and 40 percent of the male enlistments that occurred within two years of the 1980 propensity statement came from the negative propensity

Table 2.3

PERCENTAGE DISTRIBUTION OF MALES AND OF FEMALES AT EACH
INTENTION LEVEL, BY POPULATION, TEST TAKERS,
AND ENLISTEES

Enlistment Intention	Females			Males		
	Percent Population	Percent Test Takers	Percent Enlistees	Percent Population	Percent Test Takers	Percent Enlistees
Definitely	1.5	9.2	8.2	5.0	12.1	15.2
Probably	11.7	25.5	25.3	26.7	40.1	39.8
Negative	86.8	65.3	66.5	68.3	47.8	45.0
	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: 1980, 1981 Youth Attitude Tracking Study, DMDC accession files (MEPCOM).

Although intentions have been demonstrated to be potent predictors of enlistment, one should not lose sight of other variables and their role in individual enlistment decisions. Such variables presumably can lend insight into why high proportions of both male and female enlistees come from the negative intentions group—positive intentions are not the *sine qua non* of whether a person enlists. Further, while Orvis' analyses of men and women leave little doubt that intentions represent a persistent predisposition whether to enlist, little is known about how intentions are formed and what they specifically represent. On the one hand, intentions can be viewed as measuring an underlying propensity to enlist, hence the model of intentions mirrors the model of enlistment supply. On the other hand, intentions may represent an idiosyncratic taste formed through family, school, and peer experiences and constitute another *determinant* of an individual's willingness to enlist. In reality there may be truth to both views.

Consistent with the former view, positive intentions occur less frequently among persons with higher educational attainment, higher grade point average, and a current job, as one would expect for enlistment itself. But contrary to this view, we have already mentioned that many enlistees had negative intentions. Consistent with the "taste"

group" (p. 38). For HSB seniors in 1980, about 40 percent of female enlistments and 33 percent of male enlistments that had occurred within two years came from the negative propensity group. (These percentages were derived from figures presented in Table 15, OSD Report, 1985, p. 40.)

view of intentions, intentions apparently contain information not captured through the usual enlistment variables such as age, education, family income, employment status, and wage rate. When Orvis (1986) adds an indicator of positive intentions to his enlistment model, the indicator adds substantially to the equation's explanatory power and scarcely affects the contributions of the other variables.

It might be argued that testing reveals more about women's enlistment supply than enlistment itself. "The generally lower rates of enlistment among female test-takers no doubt reflects individual decisions and demand constraints on total enlistments, on types of jobs, and on quality requirements for women, which operate to restrict enlistments among women taking the written test more so than enlistments among their male counterparts" (OSD Report, 1985, p. 70). Men's test taking rates are much higher than women's in each intention category, and from the last row of Table 2.2 we see that overall 17.4 percent of men took the test, compared with 4.9 percent of women. If testing rates were taken as a rough indicator of enlistment supply largely unimpeded by height/weight standards and military job training availability, YATS data thus suggest that about 3.5 times more men are willing to enlist than women, or women are $100 \times 1/3.5 = 29$ percent as likely to be willing to enlist as men. But this estimate is flawed by the fact that recruiters, acting in accord with their recruiting goals, may regulate the number of women who test. Therefore, the 29 percent could seriously understate women's potential supply relative to men's.

We also infer from the last row of Table 2.2 that on average 35 percent of women test-takers proceed to enlist ($100 \times 1.7/4.9$) as compared with 47 percent of men test takers ($100 \times 8.2/17.4$). Part of the difference in these conversion rates must be due to women's more stringent physical standards. Buddin (1989) and Laurence (1988) find that in the youth population 23 percent of women are disqualified by height/weight criteria but only 6 percent of men, thus 17 percent more women are eliminated.⁸ To obtain an approximate adjustment for enlistment rates, we assume these rates apply to test-takers and inflate the women's rate under the assumption that their standards were no more binding than men's; this gives $35/(1 - .17) = 42$ percent. In other words, over half the male/female difference between enlistment rates given testing may derive from physical standards. Diminished job choice (fewer available training seats) perhaps explains much of the remaining difference.

⁸Height/weight standards are currently being revised to make them more equivalent for men and women in terms of the percentage who are disqualified.

Whatever factors account for women's lower enlistment rate given testing, the factors operate uniformly across intentions categories. This is evident from Table 2.3, which shows that the percentage of enlistees by intentions category is the same as the percentage of test-takers by category. The factors for men are also basically neutral across categories.

With respect to recruiter behavior, there is some survey evidence that recruiters devote less effort to the female market (Perry and Swarts, 1989). One Army survey showed females were only a third as likely to have talked with an Army recruiter as males—4 percent versus 12 percent. The survey population consisted of persons 16–24 years old in fall 1987, and the questions pertained to the six months prior to the survey. In another 1987 survey focusing on new recruits rather than on the general youth population, the Army found that new recruit females contacted the recruiter first at a 20 percentage point higher rate than males—52 percent versus 32 percent—suggesting that recruiters worked the male market harder. Recruiters have lower recruiting goals for women and arguably weaker incentives to surpass them.

With our data we cannot study the formation of intentions or the independent influence of intentions on enlistment willingness, but we can study enlistment outcomes, which we model as depending on recruiter behavior and individual willingness given eligibility. Our data combine persons with positive and negative intentions, allowing us to identify factors influencing the enlistment of both groups. There appear to be two views on the role of intentions in our model. First, to the extent intentions are the outcome of a process paralleling that of enlistment willingness, our enlistment model implicitly bears on intentions. Second, to the extent intentions represent a persistent taste, they enter the error term of our model along with other unobserved factors. Given Orvis' finding that including or omitting intentions from his enlistment equation had little effect on other explanatory variables' effects, viewing intentions as part of the error seems justifiable and should not pose statistical problems such as would arise if the error were correlated with the included variables.

III. BACKGROUND INFORMATION ON THE CONTEXT OF WOMEN'S ENLISTMENT DECISIONS

Our empirical results, given in Sec. 5, derive from 1979 data. Their relevance to today's world depends on the similarity between the set of post-high school opportunities facing a young woman then and now. To help judge, we sketch broad trends in women's labor market opportunities, college attendance, marriage and childbearing, and military opportunities.

LABOR FORCE OPPORTUNITIES

Over the past decade, the labor force participation rate for young women ages 16-24 has risen slightly, as seen in Table 3.1, while it has fallen slightly for young men. Unemployment rates for young men and women are about the same now as in 1979, yet during the period the rate for men rose to a higher level than for women. Young women's median weekly wages as a percentage of young men's have risen since 1979 from 78 percent to 88 percent in 1987. The change in median hourly wage as a percentage of male wages was not as great—82 percent to 86 percent—suggesting that hours per week worked by young

Table 3.1

CHANGES IN LABOR FORCE OPPORTUNITIES, 1979-1987: AGES 16-24

Year	Participation Rate (%)		Unemployment Rate (%)		Ratio Median Weekly Earnings Female to Male	Ratio Median Hourly Wage Female to Male
	Male	Female	Male	Female		
1979	75.0	62.5	11.4	12.2	.786	.818
1980	74.4	61.9	14.6	13.0	.803	.841
1981	73.7	61.9	15.7	14.0	.826	.861
1982	72.6	62.0	19.1	16.2	.853	.863
1983	72.5	61.9	18.4	15.8	.883	.872
1984	72.8	62.8	14.4	13.3	.878	.860
1985	73.0	63.7	14.1	13.0	.875	.876
1986	73.0	64.3	13.7	12.8	.890	.858
1987	72.3	64.6	12.6	11.7	.879	.859

SOURCE: Labor Force Statistics, Bureau of Labor Statistics.

women has increased over the period. Job opportunities for women in professional and retail services have grown immensely over the last decade, much more rapidly than for men. In professional services alone, the number of women increased 25 percent between 1979 and 1986 while the number of men hardly changed.¹

COLLEGE OPPORTUNITIES

Enrollment rates in two- and four-year colleges, as measured by the percentage of a given age group enrolled, have risen over the decade. Whereas the percentage enrolled in college grew by only a couple of percentage points for both men and women ages 18 to 24, the percentage of those ages 18 to 19 enrolled in college grew by 7 percentage points each from 1979 to 1986, as shown in Table 3.2. Initially, women's enrollments rose more rapidly, and then from 1983 on men's have risen more rapidly. The lower enrollment rate observed for women ages 18-24 relative to men is due to their higher college dropout rate and greater enrollment in short-term programs leading to a degree in less than four years, such as junior college vocational programs.

Table 3.2

CHANGES IN COLLEGE ENROLLMENT RATES, 1979-1986

Year	Percent Enrolled in College			
	Ages 18-19		Ages 18-24	
	Male	Female	Male	Female
1979	33.3	35.9	25.9	24.2
1980	34.3	37.6	26.4	24.6
1981	36.3	38.7	27.1	25.2
1982	34.7	38.2	27.2	26.0
1983	34.6	40.6	27.3	25.1
1984	37.4	39.8	28.6	25.6
1985	38.0	42.7	28.4	27.2
1986	40.1	42.8	28.2	27.6

SOURCE: *Digest of Education Statistics*, National Center for Educational Statistics, Department of Education, Washington, D.C., 1988.

¹Personal communication from Lee Lillard and Diane Macunovich, The RAND Corporation.

MARRIAGE AND FAMILY OPPORTUNITIES

The trend toward delaying marriage and starting a family has continued through the 1980s. In 1979, 59 percent of women ages 18-24 had never been married; by 1985 the figure had risen to 72 percent. The increase comes primarily from the lower marriage rates among women 20-24 because 18-19 year olds have always had a high nonmarried rate. Delaying marriage is a trend for both men and women, but is a more rapidly growing trend among women. Table 3.3 shows that the percentage of persons ages 20-24 who have not been married grew 19 percent for women compared to 12 percent for men. In addition, the birth rate among women ages 18-24 has been falling. Between 1979 and 1984, the birthrate for that group fell by about 9 percent from 96.6 births per thousand women to 86.9 births per thousand women. Young women are continuing to postpone marriage and children to pursue work and further education.

Essentially, the desire to obtain a college degree forestalls marriage. Simple tabulations from our NLS data show that in 1979 among female high school graduates, fewer than 10 percent of those ages 21-22 in college were married, compared to nearly 50 percent of those in the same age group who were not students. For female college students ages 18-20, only 2 percent were married compared to over 20 percent of their nonstudent counterparts. As seen above from a comparison of Tables 3.2 and 3.3, the rise in female college enrollment coincides with the observed decrease in marriage rates among young women.

Table 3.3

CHANGES IN RATES OF NONMARRIAGE, 1979-1985

Year	Percent Single					
	Ages 18-24		Ages 18-19		Ages 20-24	
	Male	Female	Male	Female	Male	Female
1979	75.4	59.2	94.9	83.1	67.4	49.4
1980	76.1	59.7	94.2	82.8	68.6	50.2
1981	76.9	61.1	95.7	84.7	69.5	51.9
1982	78.4	62.1	94.9	84.9	72.0	53.4
1983	79.5	64.1	96.2	87.0	73.2	55.5
1984	80.7	64.9	96.8	87.1	74.8	56.9
1985	81.3	71.7	97.1	86.7	75.6	58.5

SOURCE: U.S. Statistical Abstracts, Bureau of the Census.

MILITARY OPPORTUNITIES

Military opportunities open to a young woman probably have not changed much over the last decade. Women are frequently not eligible for enlistment incentives (bonuses, educational benefits), many of which remain linked to occupations closed to women, primarily combat- or nuclear-related skills.² Recently, the institution of the Montgomery GI Bill, which is not tied to specific occupations, made one form of educational benefits available to all military personnel. However, supplements to this Bill such as the Army College Fund are available only to high quality individuals in specific occupations. Although more skills are open to women, the number of slots designated for women may be small. A woman may enter many occupations in the military, but in practical terms her options are more limited than a similar male's.³ Thus, a young woman today typically faces only a modestly larger set of career options than did a young woman in 1979.

Consistent with this, there has been little change in the distribution of women among broad occupation groupings since 1979. As seen in Table 3.4, there has been a slight rise in Infantry (due to lessened combat restrictions) and Electrical and Mechanical Repair, and a slight drop in Administration. However, the overall picture is the same—over 60 percent of the women in a cohort, compared to 30 percent of the men, are concentrated in five occupational areas: Communications/Intelligence, Medical, Other Technical, Administration and Service/Supply. Table 3.5 shows the percentage of women in each occupational area for an accession cohort. These five occupations have the highest concentrations of women, with 30 percent of the enlistees in the administration and medical groupings being women.

From a career perspective, women have been making progress within the military in terms of promotion and quality of life. The greater

²Army tabulations show that the percentage of female accessions signing up for the Army College Fund, which is occupation-related, fell between 1984 and 1986 by 35 percent. The decline was primarily due to the mix of MOS (Military Occupational Specialty) spaces available to women in those years.

³According to a recent General Accounting Office study (GAO, 1988), of the 2.2 million jobs in the military, 1.1 million were closed to women due to combat exclusions and to program needs to support rotation and promotion policies. Of the remaining 1.1 million jobs, not all are available on a gender-free assignment basis; some jobs carry assignment quotas of say 40 or 50 percent female, others 70 percent female. In the Navy, sea duty positions theoretically open to women may not be available because of berthing quarter limitations on ships (men and women are berthed separately). With respect to accessions, the GAO found that some service procedures for identifying and implementing accession goals limit the number of unrestricted noncombat jobs made available to women. Available billets are divided between male and female recruits, the actual number being related to the accession goals for each gender. Thus, the lower accession goals set for women translate into fewer billets available to women in a given job.

Table 3.4

OCCUPATIONAL DISTRIBUTION OF ACCESSION COHORTS, BY SEX

DoD Occupation Grouping	Accession Cohort					
	Males			Females		
	1979	1982	1985	1979	1982	1985
Infantry	20.0	19.5	20.1	1.5	1.3	2.3
Electronic Equipment-Communication/Intelligence	7.3	9.3	7.1	4.7	5.1	4.6
Medical/Dental	7.8	9.1	9.1	12.1	13.0	10.9
Other Technical	3.5	3.3	3.7	10.4	11.5	10.8
Administration	1.7	1.9	1.6	3.0	2.3	2.1
Electrical/Mechanical Repair	9.0	9.5	8.9	29.2	30.9	27.3
Craftsmen	21.1	19.8	22.4	7.9	7.9	10.4
Service/Supply	4.2	3.6	3.9	2.2	1.7	2.7
Nonoccupation	8.8	8.8	9.3	10.9	10.6	10.6
	16.7	15.2	13.9	18.2	15.8	18.4

SOURCE: Defense Manpower Data Center.

awareness of women's issues over the past decade has lead to efforts by the military to deal with problems posed by sexual discrimination and the role of the military woman as a wife and mother.⁴ The services have been adjusting to the larger role women play in today's military.

First-term attrition rates for women are higher than for men largely because of pregnancy in the latter half of the first term. However, if a woman completes her first term of service, she may be more likely to continue in the military. Looking at the 1979 accession cohort, 32 percent of the women were still in the military after four years of service versus only 28 percent of the men, some of whom were six-year enlistees who had not finished their first term. After that first reenlistment point, the rate of separation is basically the same between men and women. By these retention measures, a young woman looking ahead can consider the military a career if she so chooses.

⁴Although not specifically targeted at female married personnel, the Army in recent years has been attempting to improve the quality of life for military families. Since 1984 the Army has produced an annual Army Family Action Plan outlining major family issues and specific actions to address those issues. The Plan also evaluates the progress made in addressing the previous year's goals. Recognition of the role of the family in personnel performance and retention is an important step in helping women, as well as men, fulfill their roles as spouse and parent.

Table 3.5
PERCENTAGE OF WOMEN WITHIN OCCUPATIONS,
BY ACCESSION COHORT

DoD Occupation Grouping	Accession Cohort		
	1979	1982	1985
Infantry	1.1	0.8	1.7
Electronic Equipment	8.9	6.5	8.6
Communication/Intelligence	19.0	15.3	16.0
Medical/Dental	31.2	30.2	29.8
Other Technical	20.5	13.0	15.7
Administration	33.1	29.1	30.9
Electrical/Mechanical Repair	5.4	4.3	6.4
Craftsmen	7.4	5.4	9.2
Service/Supply	15.8	13.2	14.3
Nonoccupation	14.2	11.6	16.2
Percent female in cohort	13.2	11.2	12.8

SOURCE: Defense Manpower Data Center.

How has the demand side changed, if at all, since 1979? The year 1979 was the worst recruiting year since the beginning of the all-volunteer force. Male accession goals were not met and even the female accession goal was not met by the Army. In that year, 40,593 women enlisted in the military (13.2 percent of all accessions), and in 1980, another poor year, 48,000 enlisted (13.6 percent of all accessions). Since 1982 female accessions have been averaging around 12 percent of total accessions (around 36,000 women), as seen in Table 3.6. The decline in female accessions relative to 1979-81 largely parallels that for males and can be attributed to the combination of nearly constant overall force sizes and increasing retention rates. Interestingly, the percentage of active duty personnel who are women rose between 1979 and 1987 from 7.6 to 10.3 percent.

Selection opportunities for women have changed since 1979. Whereas some women entered the military in 1979 without high school diplomas, today nearly all women selected are high school graduates. The same is basically true for men—only about 5 percent of male accessions are non-high school graduates. Men or women who score in the top AFQT Categories, I and II, may access without a high school diploma, although generally there are few such enlistees. In addition, basically only women in AFQT Categories I-IIIB can enlist. Prior to

Table 3.6

FEMALE ACCESSIONS, 1979-1987

Year	Number of Female Accessions	Percent of Total Accessions
1979	40,593	13.2
1980	48,091	13.6
1981	40,573	12.6
1982	33,096	11.2
1983	35,116	11.8
1984	35,592	11.6
1985	37,984	12.8
1986	38,035	12.1
1987	35,904	12.1

SOURCE: Defense Manpower
Data Center.

1982, women in Category IV were accepted. With the recent years of good recruiting, the number of Category IV men has also been greatly restricted relative to earlier years. Table 3.7 shows the distribution of accessions by AFQT category for men and women over the last decade. In the past few years, there has been greater emphasis on enlisting women in Categories I-III A (50th percentile and above). The proportion of these upper AFQT women has grown from 60.4 percent in 1982, the year when more stringent diploma and AFQT requirements were

Table 3.7

AFQT DISTRIBUTION OF ACCESSION COHORTS, 1979-1987, BY SEX

Year	AFQT Category									
	I		II		IIIA		IIIB		IV	
	M	F	M	F	M	F	M	F	M	F
1979	3.9	3.7	19.5	23.4	13.7	18.0	26.4	34.1	35.1	19.3
1980	3.8	3.1	20.0	20.0	14.0	15.5	26.6	29.9	35.1	30.3
1981	4.5	4.4	25.5	25.9	17.4	18.7	31.2	32.3	21.3	18.6
1982	4.9	5.7	27.8	32.1	18.4	22.6	32.0	35.3	16.7	4.4
1983	5.7	6.4	30.5	35.3	20.0	25.4	31.6	30.5	.	2.4
1984	5.8	6.0	30.7	33.6	20.5	27.1	32.2	31.0	10.5	2.2
1985	4.5	4.3	32.2	34.8	23.0	27.6	31.5	31.7	8.5	1.5
1986	4.3	4.8	34.6	38.8	24.2	30.4	32.1	25.2	4.6	0.7
1987	4.5	4.8	35.7	38.5	25.5	32.2	28.7	24.1	5.3	0.4

SOURCE: Defense Manpower Data Center.

instituted, to 75.5 percent in 1987. The same has been true for men, their percentage growing from 51.1 in 1982 to 65.7 in 1987.⁵ Thus relative to 1979, these higher AFQT attainments, coupled with the moderately lower female accession goals, suggest that on average a woman interested in the military might find it more difficult to enlist today than in 1979, and so would a man.

OUTLOOK

Although the size of youth cohorts has declined since 1979 and will decline for the next few years,⁶ several developments offset that trend. Relatively fewer young women are marrying and having children, and more are looking toward employment after high school. Thus, their outlook is toward some years of work experience before beginning married life and a family. In addition, more young women look toward further schooling than before. The educational benefits of the Montgomery GI Bill and service-specific supplements should help attract young women who find college difficult to finance on their own. It seems plausible that more women today view the military as a career, or at least a source of training and experience, than did a decade ago.

However, there is also greater competition today for young women and men from the labor market and college sectors. Private sector opportunities have improved over the last decade, as have post-secondary education enrollment rates. Also, the preceding baby-boom cohorts have largely been absorbed by the labor market. They are no longer such close substitutes for newly entering cohorts and their presence in the market will not act as strongly to hold down growth in youth wages. Many experts, in fact, expect youth wages to grow relative to those of prime age males; see, for example, Tan and Ward (1985) and references therein. These trends suggest that recruiters will have more difficulty in the near term as compared with the past few years. Even though the number of accessions sought by the services has decreased due to force reductions since 1988, the military may still need to sell their package a little harder to women, particularly if they need to increase the number of female accessions in order to cover possible declines in high quality male accessions.

⁵Since 1988, quality standards have been the same for men and women. However, the proportion of high quality recruits is still higher for female recruits than for males. This is consistent with the idea that more women want to enlist than there are slots available, so the services can select the "best" of the qualified.

⁶Predictions suggest a drop of 12 percent between 1989 and 1994 in the size of the youth population, with the decrease being the same for male and female cohorts.

Indeed, Army recruiters report difficulty meeting goals in the current environment. Tougher recruiting times with respect to males have generally led to increases in female enlistments, but times may be getting tougher for female recruiting as well.

If, however, as seems likely as the Cold War draws to a close, force requirements and thus force sizes decline, the services may decide to reduce the absolute or relative number of women joining the armed forces. Under a force reduction, recruitment pressures are likely to ease in the short term. But other adjustments could occur—reductions in recruiting resources, in enlistment incentives, and in military starting pay—that would make future recruiting conditions as stringent as they would have been without the force reduction.

IV. APPROACH TO ESTIMATING WOMEN'S ENLISTMENT SUPPLY

This section describes our theoretical and empirical approach to estimating women's enlistment supply. We discuss enlistment as an individual's choice among the alternatives of school, work, and military service. The school and work choices are related to person-level variables regarding education and employment opportunities. Also, we assume that the individual's willingness to enlist is a function of recruiter effort. We describe recruiter effort as depending on the recruiter's perceived utility from and costs of recruiting men and women, and we further argue that utility and costs depend, directly or indirectly, on local market characteristics. Having posed enlistment as an individual choice influenced by recruiter effort, we specify an empirical model and, in the next section, present the results. Finally, we consider the issue of women's enlistment being demand constrained. Because women are probably demand constrained in aggregate, aggregate-data estimates of their supply curve may be biased.¹ In our view, however, the use of individual rather than aggregate data can alleviate the problem of bias, partly because the demand constraint need not bind at the micro level even though it binds in aggregate.

ENLISTMENT AS INDIVIDUAL CHOICE

We assume that individuals can evaluate different career paths and will choose the one that maximizes their utility. For youth considering enlistment, the obvious alternatives are further schooling, market work, or some combination of the two. Therefore, variables that make school or work relatively more attractive should have a negative effect on enlistment. As shown in our previous work on males (Hosek and Peterson, 1985) such variables might include academic ability, ability to finance further schooling, job holding, longer job tenure, and higher earnings. Other variables may also influence enlistment but are more difficult to sign a priori, for example, parent's education, the

¹Aggregate studies of enlistment often adopt the perspective that the services demand more high quality male enlistees than they can obtain at prevailing levels of military compensation. Therefore, time series-cross sectional data on high quality males can be used to identify their enlistment supply curve (Ash, U'is, and McNown, 1983; Brown, 1985; Cotterman, 1986; Dale and Gilroy, 1984).

expectation to obtain more education, and marriage and childbearing plans. On the military side, advertising, incentives, pay, training, and so forth can all be expected to make a difference. However, because our data are from a point in time, spring 1979, there is no cross sectional variation in these variables, and their effects cannot be estimated.

Because of the sequential nature of education, training, and career decisions, the determinants of enlistment may differ between persons when choices first become observable—here, the high school senior year—and persons at a later stage (persons who had previously chosen not to enlist).² In general, the latter include post-secondary students and nonstudents, but because such students have a low probability of enlistment (not surprisingly, given that they have chosen to be students) we limit this portion of the analysis to high school graduates who are not full-time post-secondary students and in fact are largely labor force participants. The latter group, whom we call “graduates” for short, form a selected population who initially were inclined to favor market work over enlistment and who in the meantime have accumulated labor market experience. As an indication of this selectivity, in previous work we have found that the education expectations variable has a negative effect on seniors’ enlistment but a positive effect on graduates’ enlistment. Given the selectivity, we analyze seniors and graduates separately.

Table 4.1 shows the person-level variables we use in the empirical analysis. Complete definitions of the variables are in App. A, “Glossary of Variables.” The role of these variables is discussed in Sec. V with the results.

RECRUITER EFFORT

In addition to the variables in Table 4.1, a young person’s willingness to enlist depends on recruiter effort. Nearly all youth have some awareness of military service as a career opportunity, either through advertising, recruiter contact in high school, or the experience of a friend. Recruiters follow through to develop contacts, identify good prospects, and convert those prospects into recruits. The recruiter can be expected to provide information about service life, training opportunities, enlistment incentives, compensation, housing, term of service, duty locations, post-service opportunities, and so forth. He also arranges for ASVAB testing and guides prospects to the enlistment

²Our empirical work examines persons who are seniors or high school graduates. High school dropouts are omitted from our analysis.

Table 4.1
PERSON-LEVEL VARIABLES

Concept	Variable
1. Academic ability	Age when a senior AFQT score
2. Ability to finance schooling or job search	Family income Number of siblings
3. Education expectations	Expects more education dummy
4. Parental influence	Mother's years of schooling Mother worked when person age 14
5. Earnings, currently employed	Hourly wage Weekly hours
6. Tenure	Months employed
7. Joblessness	Not currently employed dummy Weekly hours, not currently employed Months not employed Not employed in last 12 months
8. Race	Black Hispanic
9. Low military training potential	AFQT Category IV (10th to 30th percentile)
10. Has children	Has children dummy
11. Marriage status and plans	Ever married Plans to never marry Plans to marry in next 5 years

processing center for a physical exam, job counseling, and, it is hoped, enlistment itself. Thus, while a recruiter may or may not be responsible for initiating contact with a potential prospect, there is no doubt that the recruiter will have spent time with the prospect before he or she enlists. Further, although enlistment remains a matter of individual choice, the recruiter helps qualify the prospect, provides information, and acts to facilitate the enlistment process. Indeed, enlistment cannot be accomplished without the involvement of the recruiter.

Although earlier unpublished work on military enlistment had occasionally used enlistment quotas as explanatory variables, the theoretical motivation was ad hoc. Dertouzos (1985) was the first to place the role of the recruiter within a behavioral framework, arguing theoretically that the allocation of recruiter effort depended on the goals (or quotas), incentives, and costs faced by the recruiter. In this

way, the recruiter had risen from a vaguely understood "factor" in enlistment supply to an integral part of the supply process. Moreover, it became clear that unless recruiter effort were properly accounted for in empirical estimation, the effects of key variables such as enlistment bonuses or educational benefits could be muddled and misleading.

We rely on Dertouzes' theory in our work even though our data are different, and we must adopt a different empirical approach. Thus, it is useful to think of the recruiter as maximizing the value of a utility function that depends on the levels of various kinds of recruits and on leisure. More effort spent in recruiting reduces leisure but, through a recruit production function, increases the number of recruits. Further, the utility function is assumed to incorporate recruiting goals as well as the recruiter's incentives to attain the goals. For instance, there could be an explicit overall quantity goal, high quality male goal, and a female goal, and there could be incremental points for each kind of recruit and bonus points for making each of the goals. Alternatively, the goals and incentives could be less specific and more implicit. In any case, when deciding on his level of recruiting effort and its allocation across market segments, the recruiter will, in theory, be influenced by his goals, incentives, and cost (incremental effort required per recruit).

Goals, incentives, and costs all depend on characteristics of the local recruiting market. This is easiest to see for cost. Markets with low per capita income, slow growth, high unemployment, more youth eligible for the military, greater competition among workers with low experience, and low contact costs should be relatively rich sources of recruits, given the size of the youth population. The marginal cost of another recruit with respect to recruiter effort should be lower in these markets. This means that a recruiter can be expected to attain a given recruiting goal in such markets with less effort.

Recognizing this, the recruiting command seeks to set local goals and incentives that in effect adjust for differences in marginal cost across markets. Moreover, in the longer term this may mean opening or closing recruiting stations and assigning more or fewer recruiters. In our analysis we control for the latter through a "recruiter density" variable, which is the ratio of the number of recruiters to the local youth population. Holding that constant, we expect recruiters in rich (low marginal cost) markets to be assigned higher goals because they should be attainable without greater effort. The higher goals must be accompanied by incentives that encourage the recruiter to reach the specific goals, not lower levels of recruits or other combinations of recruits.

Summarizing, recruiter effort depends on goals, incentives, and effort-cost per recruit. Recruiters in richer markets have lower cost. Recognizing that, goal-setters set higher goals and appropriate incentives, with the intent of inducing recruiters in rich markets to supply as much effort toward the preferred goals as recruiters in poor markets. This should result in more recruits per recruiter in rich markets, holding recruiter density constant. The main implication for our analysis is that variables associated with market richness should have a positive effect on the probability that an individual enlists. This is noteworthy because our data do not contain direct measures of recruiter effort.

Table 4.2 specifies the variables we use to characterize a market's recruiting richness and also includes recruiter density. Again, see App. A for complete definitions of the variables.

DEMAND CONSTRAINT

The foregoing discussion deals with variables affecting an individual's decision to enlist. We have identified person-level variables as well as recruiter effort, linking the latter to local market variables through their role in the process of setting goals and incentives and their relationship to the recruiting effort required per recruit. The approach so far applies to any kind of recruit, women as well as men. Nevertheless, the services have set much lower recruiting goals for women than men, so we must consider the possibility that women are

Table 4.2

LOCAL MARKET RICHNESS

Concept	Variable
1. Per capita income	Per capita income
2. Economic growth	Change in per capita income
3. Unemployment	Unemployment rate
4. Eligible youth	Percent black of county population Percent Hispanic of county population
5. Competition among inexperienced workers	Percent women in county labor force
6. Low contact cost	Seniors and recent graduates as a percent of county youth
7. Recruiter density	Production recruiters per thousand male youth in county

demand constrained. According to the theory, lower goals for women should cause recruiters to spend less overall effort on the women's market, although not necessarily less effort per qualified prospect. That is, the recruiter has the goals and incentives to recruit fewer women than men.

Here, the conventional paradigm of demand constraint needs to be placed in the context of enlistment. Two aspects set enlistment apart from the usual case of demand constraint: youth are heterogeneous in their quality as prospective enlistees, and the military sets quality floors in the form of overall and occupation-specific eligibility standards. First, heterogeneous quality is already anticipated in the model of recruiter behavior. The recruiter is told to prefer higher quality prospects to lower quality; this is part of his utility function. Still, his allocation of effort depends on goals, incentives, and costs as well. For instance, the recruiter might sometimes be better off recruiting a larger number of lower quality women than a smaller number of higher quality women. Similarly, the recruiter might be better off exceeding the goal for men and missing the goal for women, as compared to making both goals. Thus, heterogeneous quality does not destroy the basic notion of demand constraint but points to the recruiter's role in rationing the potential supply of recruits to the number of positions available. It is still possible that the number of women who want to enlist, given their quality, exceeds the demand for women of that quality. Because the recruiter does not know a woman's quality without making some effort, and because women do not queue up to see the recruiter in order of their quality, the recruiter will typically be in contact with women from the entire quality spectrum. It follows that excess supply could exist at any level of quality. What the recruiter chooses to do depends on the perceived returns and costs of seeking another higher quality woman versus a lower quality woman, and versus the returns and costs of recruiting another higher or lower quality man. The actions of the recruiter influence and perhaps ration the flow of recruits.

Second, quality floors are easily accommodated. They limit the pool of youth eligible to enlist and so reduce potential supply, but again they do not eliminate the possibility of excess supply. Also, because quality floors are set by the service, not the recruiter, the problem of endogeneity is avoided: because the recruiter does not set the floors, he cannot be accused of setting them so high as to define away excess supply.

The demand constraint binds if more eligible women want to enlist at prevailing conditions than can enlist.³ At the macro level the effect of a binding demand constraint on biasing parameter estimates is well recognized, but the effect is less clear at the micro level. Brown (1985) states that "there seems to be little available research on how demand constraints make themselves felt locally" (p. 232). We think there are several reasons to doubt whether the demand constraint poses a problem at the individual level.

First, given the recruiter's role in the enlistment decisionmaking process, if recruiters spend less effort contacting, informing, and facilitating enlistment, fewer people will want to enlist. Like advertising, bonuses, and educational benefits, recruiter effort can affect potential supply. Therefore, the extent to which the demand constraint binds should depend on the level of recruiter effort. With the low level of effort expected, the demand constraint is less likely to bind.

Second, the demand constraint is "soft" at the individual level. A recruiter is not strictly limited by his recruiting goals. He can recruit women in excess of his goal without fear of causing a problem, as long as the aggregate goal is not exceeded. Recruiters typically experience month-to-month variation in their ability to meet their goals in any recruit category.

Third, if the demand constraint does bind, the rationing that occurs in determining who enlists and who does not could be unrelated to the variables included in the model. For example, many women who initially want to enlist may be deterred by the limited range of occupations open to women and the possibly long wait for certain training seats. These factors, cited in our literature review, seem unrelated to the person- and market-level variables listed above.

Still, the recruiter can be expected to act opportunistically by devoting the most effort to the most promising prospects. This is a legitimate concern, but again we think there are mitigating circumstances. By limiting our analysis to seniors and graduates, we control for part of this aspect of selection. Further, the recruiter will tend to pursue women whom he believes are socially and psychologically well suited to the military (otherwise they might drop out of the enlistment process at a later stage or not complete their term of enlistment) and interested in the military occupations open to women. These factors may be idiosyncratic and unrelated to our variables. It is not clear that our variables represent occupational preference, adaptability, or taste for service. Finally, among qualified, interested women the recruiter

³For the prospective recruit, prevailing conditions include not only recruiter effort but also personal circumstances such as family background and employment status as well as the attributes of enlistment—military pay, incentives, training opportunities, and so on.

might spend more time on those who see the military as a good source of earnings, training, and educational benefits. This is not because the recruiter has selected these women for his attention, but because they are the most strongly motivated to enlist and have barged to the head of the line. For women intent on enlisting, the scope of the recruiter as a rationing agent may be small.

If the demand constraint is not binding at the micro level, or if the rationing process is unrelated to variables included in the analysis, then the coefficients in the enlistment equation should not be biased. But if the constraint binds or rationing is correlated with the included variables, their coefficients will be biased. With our data we cannot follow women through the stages of enlistment decisionmaking and examine the recruiter's behavior in this process, and therefore we cannot judge the extent of bias if it exists. (Consequently, we do not present a statistical model of the bias.)

EMPIRICAL MODEL

The foregoing discussion indicates that a person's enlistment probability depends on person-level variables x and recruiter effort t . We have cast enlistment as a choice among three alternatives—military service, school, and work. Our data do not record separate outcomes for school and work, however, but combine them, making the observed choice of enlistment versus nonenlistment, a dichotomous outcome. Thus, in our enlistment probability regressions, the coefficients on x and t will show the effects of these variables on enlistment relative to nonenlistment. We cannot estimate the possibly separate effects particular variables might have on the choice of school versus work.

The discussion also suggests that recruiter effort is a function of the recruiter's goals, incentives, and costs, all of which depend on local market variables z . Also, recruiter effort enters the individual's enlistment equation exogenously. This follows from the fact that the chosen level of recruiter effort derives from the recruiter's utility maximization, which is done independently of the person's choice.

In addition to local market variables, recruiter effort can depend on a prospect's own characteristics. As we have said, the recruiter acts opportunistically to recruit persons best suited to military service. Our data, however, are not appropriate for determining the extent to which the recruiter keys his behavior on the prospect's characteristics. We have data only on the outcomes "enlist" or "not enlist," and the recruiter cannot be presumed to have made contact with many of the nonenlistees and screened them as serious prospects. On the other

hand, if data were also available on who became a serious prospect, then one could estimate a two-equation sequential model for (a) qualifying as a serious prospect and (b) enlisting given qualification. In the second equation, where the individual has become known to the recruiter, the individual's characteristics could reasonably be included in the equation for recruiter effort. Of course, those characteristics would also be in the individual's own supply equation. Therefore, the coefficients on the characteristics would express both the own supply effect and the recruiter effort effect. This would apply to any prospect, man or woman. In sum, for our purposes we will assume that recruiter effort is a function of local market variables only, not also person-level variables. Future work could easily relax this assumption with appropriate data.

Another possibility is that the individual's enlistment decision depends directly on the local market variables. For instance, an unemployed person may be more likely to enlist if the local unemployment rate is high, and anyone might be less likely to enlist if the local economy is healthy (high per capita income) and growing (positive change in per capita income over time). The implication is that local variables' effects can represent effects related to recruiter effort and effects related to individual decisions apart from recruiter effort. Some of our local variables seem able to support a dual role naturally—per capita income, change in per capita income, unemployment rate, and women as a percent of the local labor force—whereas others seem more exclusively linked to recruiter effort—percent black of the county population, percent Hispanic, recruiter density, and seniors and recent graduates as a percent of county youth. The possible dual role of local market variables must be kept in mind when interpreting the results.

Our empirical model begins with two structural equations, one for supply—the individual's decision to enlist—and the other for recruiter effort. For supply, we assume that a suitably transformed value of p , a logit or probit, is linearly related to person-level variables x , local market variables z , and recruiter effort t . For recruiter effort, we assume that t is linearly related to z . The recruiter effort equation is substituted into the supply equation to produce a reduced form equation, which we estimate. We refer to the estimating equation as the enlistment probability equation, being careful to avoid the connotation that it is the supply equation. Thus, for person i in county j we have

$$g(p)_{ij} = \alpha_0 + \alpha_1 x_i + \alpha_2 z_j + \alpha_3 t_{ij} \quad (1)$$

$$t_{ij} = \delta_0 + \delta_1 z_j \quad (2)$$

$$\text{hence } g(p)_{ij} = \alpha_0 + \alpha_1 x_i + \alpha_2 z_j + \alpha_3(\delta_0 + \delta_1 z_j) \quad (3)$$

$$= \beta_0 + \beta_1 x_i + \beta_2 z_j \quad (4)$$

$$\text{where } \beta_0 = \alpha_0 + \alpha_3 \delta_0$$

$$\beta_1 = \alpha_1$$

$$\beta_2 = \alpha_2 + \alpha_3 \delta_1$$

We use a logit specification to estimate Eq. (4) separately for men and women.⁴ By so doing we can investigate whether men's and women's enlistment determinants are similar in sign and size.⁵ Notice that the estimated intercept combines the supply equation intercept and the recruiter effort intercept; these effects are not separately identified. It is possible that δ_0 will be lower for women than for men because goals for women are lower. As a result, the women's enlistment intercept β_0 would be lower. Further, the specification combines the supply and recruiter effort effects of local variables; again, their separate effects are not identified. In contrast, the supply effects of person-level variables are identified. Given the specification, we can observe the "pure" supply effect of variables such as AFQT score, family income, wage rate, and employment status.

Finally, we remark that the specification does not include service variables. Although in general they belong, we have omitted them because they are absent from our data. We therefore have no way of estimating the effects of advertising, enlistment incentives, educational benefits, the range of open occupational specialties, and so forth, yet that could be done were data available.

⁴Because we use a logit, we have for simplicity left out error terms in Eqs. (1)-(4).

⁵The logit (or probit) functional form causes the variables' effects to depend on the point of evaluation: $\partial p / \partial x = \beta_1 p(1 - p)$. In particular, greater recruiter effort can amplify the effect of a personal characteristic: $\partial^2 p / \partial z \partial x = \beta_1 \beta_2 p(1 - p)(1 - 2p) > 0$ for $\beta_1, \beta_2 > 0$ and $p < 1/2$.

V. MULTIVARIATE ANALYSIS OF WOMEN'S AND MEN'S ENLISTMENT

We have argued that the same general factors influencing a young man's decision to enlist will also be relevant to a young woman's decision. Also, there is growing similarity in background patterns of schooling and work among young women and men. Therefore, one might expect the estimated enlistment equations for both sexes to be similar. That is what we find.

DATA AND METHOD

Our empirical analysis employs a choice-based sample constructed from two separate, stratified random samples taken in spring 1979. The 1979 Armed Forces Entrance and Examination Station (AFEES) Wave I Sample provided data on enlistees, and the 1979 National Longitudinal Survey (NLS) of Youth Labor Force Behavior provided data on nonenlistees.¹ These surveys allowed us to prepare a combined file with extensive information on individuals ages 17-22 and their family backgrounds. To this file we added county-level information helping account for the recruiting richness of the local market. Separate multivariate analyses were made for seniors and nonstudent high school graduates, for men and for women. We adopted the procedure suggested by Manski and Lerman (1977) to obtain parameter estimates with choice-based data for our logistic model. This procedure, which reweights the data to adjust for the oversampling by choice, produces consistent coefficient estimates and consistent, asymptotically normal standard errors, from which we report t-statistics for the null hypothesis of no effect (zero coefficient). Appendix A contains a glossary of variables as well as a table showing sample sizes. Variable means and standard deviations are given in App. B.

OVERVIEW OF RESULTS

The empirical results support the following broad inferences: (1) the qualitative responses are nearly equal by sex for seniors and also for

¹Nonenlistees who would be deemed ineligible due to very low AFQT scores (AFQT percentile less than 10), exceeding enlistment height and weight standards, and, among women, those with dependent children who would not meet enlistment restrictions on dependents were dropped from the analysis.

graduates; (2) even though sets of coefficients differ statistically between males and females, for most variables their coefficients taken individually are statistically equivalent for male and female seniors and for male and female graduates.² *These findings offer strong evidence that men's and women's enlistment decisions are affected by the same factors and often in the same way.* Still, some differences between men and women seem apparent: (3) women's intercepts are found to be smaller, consistent with their having lower recruiting goals; (4) the effects of labor force related variables are often smaller for women than for men, perhaps reflecting a weaker labor force commitment among women and greater difficulty in finding satisfactory employment; and (5) for those with no immediate marriage plans, women who plan to marry within five years are deterred from enlisting, although men are not.

Tables 5.1 and 5.2 present the logistic regression estimates for seniors and graduates, respectively. Each table contains three columns. The first column lists the coefficients and t-statistics for the male probability of enlistment equation, the second column does so for the female equation, and the third column presents t-statistics for tests of equivalence between the male and female coefficients.³ Two-tailed t-statistics above 1.64 (1.96) indicate that the coefficients are different at the 10 percent (5 percent) level of significance. We focus on the individual coefficient tests of equality first because those tests isolate the differences found in the tests of equality between sets of coefficients that are reported at the end of this section.

INDIVIDUAL VARIABLE EFFECTS

A closer look at the coefficients for seniors and graduates shows that education-related variables are more important for seniors whereas work-related variables are more important for graduates. This pattern in part reflects the fact that graduates are a selected population who have chosen the civilian labor market, whereas seniors have not yet made their school/work/service choice. We now discuss the specific variables.

²In the joint test used (a likelihood ratio test), only one or two significantly different variables could result in the rejection of the hypothesis that the set of coefficients is equal between the two groups.

³With a logit specification, the estimated coefficients are in fact equal to the true coefficients relative to a scale parameter. In comparing coefficients across equations, it is usually implicitly assumed that the scale parameters are basically the same for each equation. The equal scale parameter assumption seems acceptable given our results. We find that the equality of coefficient estimates for males and females based on separate regressions are virtually identical to those based on the pooled regression with interactions, which suggests that the male and female scale parameters are very similar.

Table 5.1

LOGISTIC REGRESSION OF ENLISTMENT PROBABILITY: SENIORS

Variable	Male Seniors	Female Seniors	t-statistic for Difference in Coefficients
Intercept	-4.12 (-3.02)	-6.76 (-2.98)	-1.01
Age 17 when senior	-.444 (-3.61)	-.706 (-4.13)	-1.26
Age 19 or more when senior	.504 (2.00)	1.43 (2.82)	1.46
AFQT score (31-99)	-.010 (-2.50)	-.011 (-1.82)	-0.16
Lives at home	.249 (0.91)	-.100 (-0.27)	-0.59
Family income (in \$ thousands)	-.030 (-5.17)	-.039 (-4.13)	-0.78
Number of siblings	.262 (6.21)	.336 (6.32)	0.98
Expects more education	-.159 (-1.20)	-.391 (-2.09)	-0.93
Mother's years of schooling	.101 (2.68)	-.018 (-0.36)	-1.93
Hourly wage (natural log)	-.204 (-0.38)	-.647 (-0.57)	-0.35
Weekly hours currently employed	.044 (5.40)	.035 (2.64)	-0.69
Months employed (natural log)	-.244 (-3.32)	.023 (0.20)	2.01
Not currently employed	-.414 (-0.41)	-1.70 (-0.97)	-0.68
Weekly hours not currently employed	.009 (0.86)	.021 (1.33)	0.63
Months not employed	.010 (0.09)	.165 (1.00)	0.83
Not employed in last 12 months	.417 (0.56)	.807 (0.55)	0.22
Black	.615 (2.83)	1.35 (4.50)	1.89

Table 5.1—continued

Variable	Male Seniors	Female Seniors	t-statistic for Difference in Coefficients
Hispanic	-.023 (-0.08)	-.032 (-0.01)	-0.04
Category IV Indicator	-.948 (-3.34)	-.841 (-2.13)	0.29
Has children	—	-2.33 (-1.70)	—
Ever married	—	-.354 (-0.50)	—
Plans never to marry	3.07 (5.36)	5.38 (2.71)	1.24
Plans to get married in next 5 years	1.45 (10.52)	.106 (0.55)	-5.57
Mother worked when respondent was age 14	.715 (4.52)	.508 (2.40)	-0.84
Percent of youth population that are seniors and recent graduates	-.076 (-1.77)	-.071 (-1.10)	0.04
Recruiter density (per thousand population)	.662 (0.61)	2.03 (1.33)	0.77
Per capita personal income in county (in \$ thousands)	-.163 (-3.83)	.034 (0.57)	2.83
Unemployment rate in county	-.038 (-0.92)	.045 (0.71)	1.04
Percent of county population that is black	-.034 (-5.22)	-.043 (-4.28)	-0.68
Percent of county population that is Hispanic	-.0009 (-0.11)	-.0016 (-0.18)	-0.08
Percent of county labor force that is female	.075 (3.14)	.068 (1.84)	-0.10
Percent change in per capita personal income from previous year	-.091 (-2.99)	-.037 (-0.95)	0.84
County unemployment rate x not currently employed	-.160 (-1.26)	.125 (0.62)	1.29
County unemployment rate x not employed in last 12 months	.061 (0.94)	.027 (0.32)	-0.29
County unemployment rate x months not employed	.037 (1.92)	-.006 (-0.21)	-1.27

Table 5.1—continued

Variable	Male Seniors	Female Seniors	t-statistic for Difference in Coefficients
Wage < \$2.25/hour	-1.31 (-1.97)	-.177 (-0.14)	0.77
Family income < \$5200	.191 (0.51)	-.528 (-1.19)	-1.22
Family income missing	-.452 (-2.29)	-.725 (-2.68)	-0.78
AFQT score missing	-.182 (-0.55)	1.73 (3.31)	3.09
Hourly wage missing	-.713 (-1.11)	-1.20 (-0.93)	-0.33

Seniors with greater academic potential are less likely to enlist. We see this in the negative coefficient of AFQT score and from the positive effect of age when a senior. Older seniors, age 19 or more, are probably less academically able than 18-year-old seniors, while younger seniors, age 17, are probably more able. The AFQT and age-when-a-senior effects are usually smaller and less significant for graduates than for seniors, for both men and women. These variables may exert much of their influence during the senior year when many persons are deciding upon postsecondary education. Because college enrollees are excluded from our graduates, it is understandable that age when a senior and AFQT score have weaker roles in the graduates' enlistment equation.

Family income has a strong, negative influence on enlistment among seniors.⁴ Apparently, students in families able to afford higher education can proceed to obtain it. In contrast, the income coefficient for graduates is neither large nor significant. Thus, family income helps channel male and female seniors to college, but among graduates, who are typically choosing between continuation in the labor market and enlistment, family income is not a differentiating factor. Seniors who intended to go to college and could afford it, have already gone. Among those remaining, the negligible effect of family income on graduates means that it has little influence on the choice between continued work and military service.

⁴In these data, family income is defined only for those individuals who still live with their parents. For those not living at home, family income is not recorded.

Table 5.2

LOGISTIC REGRESSION OF ENLISTMENT PROBABILITY: GRADUATES

Variable	Male HS Graduates	Female HS Graduates	t-statistic for Difference in Coefficients
Intercept	1.75 (1.61)	-2.39 (-1.66)	-2.30
Age 17 when senior	-.134 (-1.17)	-.510 (-3.26)	-1.93
Age 19 or more when senior	-.258 (-1.37)	.318 (1.03)	1.59
AFQT score (31-99)	.0001 (0.03)	-.004 (-0.96)	-0.77
Lives at home	.103 (0.61)	.804 (3.57)	2.48
Family income (in \$ thousands)	-.001 (-0.09)	-.010 (-1.19)	-0.93
Number of siblings	.149 (4.93)	.249 (6.55)	2.07
Expects more education	1.05 (9.85)	1.21 (8.65)	0.87
Mother's years of schooling	.074 (2.45)	.070 (2.03)	-0.08
Months since last school (natural log)	-.392 (-6.40)	-.063 (-0.88)	3.50
Hourly wage (natural log)	-1.05 (-5.84)	-1.03 (-3.00)	0.07
Weekly hours currently employed	-.012 (-2.12)	.001 (0.18)	1.38
Months employed (natural log)	-.124 (-2.80)	-.038 (-0.60)	1.10
Not currently employed	-3.09 (-3.97)	-2.74 (-2.78)	0.28
Weekly hours, not currently employed	.029 (2.34)	.038 (3.10)	0.50
Months not employed	.040 (0.40)	-.018 (-0.15)	0.36
Not employed in last 12 months	-1.40 (-2.28)	-.421 (-0.60)	1.05

Table 5.2—continued

Variable	Male HS Graduates	Female HS Graduates	t-statistic for Difference in Coefficients
Black	.878 (4.83)	1.59 (7.11)	2.46
Hispanic	-.183 (-0.68)	-.175 (-0.55)	0.02
Category IV Indicator	-.071 (-0.29)	-.362 (-1.24)	-0.77
Some post-HS education	-.442 (-2.84)	-.929 (-4.64)	-1.92
General Education Development (GED)	.237 (0.97)	-.225 (-0.83)	-1.27
Has children	-.059 (-0.26)	-1.26 (-4.21)	-3.22
Ever married	.737 (3.44)	-.834 (-3.40)	-1.83
Plans never to marry	2.00 (5.55)	3.97 (4.15)	1.93
Plans to get married in next 5 years	.848 (6.41)	-.489 (-2.55)	-5.76
Mother worked when respondent was age 14	.259 (2.09)	.294 (1.90)	0.17
Percent of youth population that are seniors and recent graduates	-.234 (-6.40)	-.157 (-3.28)	1.29
Recruiter density (per thousand population)	.924 (1.00)	1.46 (1.32)	0.37
Per capita personal income in county (in \$ thousands)	-.156 (-4.62)	-.141 (-3.06)	0.26
Unemployment rate in county	-.048 (-1.50)	-.046 (-1.04)	0.03
Percent of county population that is black	-.021 (-3.87)	-.036 (-5.08)	-1.65
Percent of county population that is Hispanic	.008 (1.17)	.010 (1.15)	0.18
Percent of county labor force that is female	.041 (2.01)	.036 (1.33)	-0.14
Percent change in per capita personal income from previous year	-.012 (-0.57)	-.064 (-2.09)	-1.40

Table 5.2—continued

Variable	Male HS Graduates	Female HS Graduates	t-statistic for Difference in Coefficients
County unemployment rate × not currently employed	-.103 (-1.21)	.048 (0.40)	1.03
County unemployment rate × not employed in last 12 months	.263 (2.81)	.084 (1.11)	-1.48
County unemployment rate × months not employed	.070 (3.52)	.027 (1.28)	-1.48
Family income < \$5200	-.800 (-3.15)	-.426 (-1.16)	0.85
Family income missing	-.223 (-1.22)	-.389 (-1.58)	-0.54
AFQT score missing	.023 (0.11)	1.33 (3.74)	2.93
Hourly wage missing	-1.15 (-3.78)	-1.34 (-2.80)	-0.34

The income results do not support the additional explanation that the seniors' negative income effect comes from upper income families subsidizing their initial career search. If this occurred and paid off with a job well matched to one's tastes and talents, then there should be a negative income effect among graduates. Nevertheless, the career search support hypothesis might be true. In our data family income is reported only for youth living with parent(s). If a family-supported career search were successful, the young man or woman might have moved out, which would make the estimated income effect smaller (closer to zero) than otherwise. Also, we can turn to another variable for evidence on the career search hypothesis, the number of siblings.

As number of siblings increases and per capita family income falls, the family's ability to afford higher education or career search declines. The number of siblings has a strong positive effect on enlistment, especially for seniors. Still, in contrast to income, this variable has a positive, significant effect on enlistment for both seniors and graduates. The positive effect for graduates suggests that their families have not been able to support their career search, so a good civilian job match is less likely and military service is more attractive. The military offers job counseling as well as formal training.

This result complements the finding in Behrman et al. (1989) that children in larger families must be more self-reliant in financing their

education. "For both males and females, there are strong and statistically significant positive effects of number of siblings on work and the use of loans, and a significant negative effect on parental aid even when we control for birth order, offsprings' and parents' ages, mother's education, and parents' income" (p. 406). We find that graduates from larger families often see "work" in the military as preferable to further civilian employment. In addition, for seniors the military may also be seen as a source of funds for further education and, as with graduates, a source of skills and training that they might have difficulty finding in the civilian labor market.

The notion of the military as a source of education and training opportunities is pertinent to education expectations. For men and women, the education expectations variable has opposite effects for seniors and graduates.⁵ Seniors who expect more education are less likely to enlist, graduates who expect more education are far more likely to enlist. Seniors who expect more education probably intend to go directly to college (four year, two year, or vocational/technical). Graduates, who initially preferred civilian employment to enlistment, now tend to prefer the military. Again, selectivity may underlie the change in the effect of education expectations. Seniors who sought and could finance further education are likely to be in college, whereas graduates who expect more education perhaps could not afford it when seniors and thought the private sector would offer superior training and earnings opportunities over the military. But these expectations have not been borne out, and now, given that they expect more education, they find the military more appealing. A few examples elaborate on this theme.

First, consider a graduate who has continued to hold positive expectations from his senior year onward. His decision to take a job after high school suggests that he could not immediately afford postsecondary school, was unsure what to study, or wanted some practical experience. The civilian job, as compared to the military, did not entail a fixed-term employment contract and could easily be followed by other jobs from which to gain broader experience. But perhaps he could not save enough to finance further schooling or gained little useful experience and training. Whatever the reason, he now views the military as his best choice. Next, take a graduate who continues to have negative education expectations. As a senior he chose not to attend postsecondary school and selected the market over the military. If his education

⁵One might argue that education expectations (and marital expectations, which are discussed later) are not exogenous. However, we found no significant changes in the regression results when the education and marriage expectations were excluded.

expectations remain negative, the training and educational benefits of military service offer little lure. A graduate who had negative education expectations as a senior, but changed to positive expectations, believes that career advancement will require further education. His higher enlistment probability reflects a positive assessment of the military's educational benefits and training, which itself may substitute for additional formal education. Finally, the graduate who had positive education expectations as a senior, but changed to negative expectations, has found success in the market relative to the anticipated returns from military service or school enrollment. According to our results, he is not apt to enlist.

Two other school-related variables indicate whether a graduate received a GED (General Education Development) equivalency certificate instead of a high school diploma, and whether a graduate had already obtained some formal education after high school. The GED variable shows no significance, whereas the "some postsecondary schooling" variable has a strong, negative effect. For persons who have had postsecondary schooling, military service offers little attraction.

Parental influence is represented through mother's education and a variable indicating whether the mother worked when the person was age 14. Mother's education and father's education are positively correlated, and a positive effect of mother's education on enlistment would suggest that more educated parents view the military as a valuable experience for their child compared to the alternatives. A nil effect would mean that enlistment is not seen by parents as offering a net advantage. For seniors, mother's education has a positive effect on enlistment for male seniors but a nearly zero effect for female seniors. This picture changes when we turn to graduates. Here the effect of mother's education is positive for women too, and their coefficient is basically the same as for men. Further, if the mother worked when the person was 14, the probability of enlistment is higher, more so for seniors than for graduates.

We include the log of months since graduating from high school as a control for labor market experience as well as a continuing disinclination to enlist. We expected a negative effect of months and find one for males but not females, whose coefficient is not statistically different from zero. This difference may reflect men's stronger attachment to the labor force. Still, our regression includes variables that help control for labor force attachment, i.e., marriage status and marriage plans. Another possibility is that women have greater difficulty finding a niche in the civilian labor market and, therefore, are more willing to explore military opportunities.

With respect to marriage plans, the possibility of finding a husband might bear on a woman's evaluation of the military. Our results do not support this view. In general terms, the chances of finding a husband are higher in the military with its 8:1 male/female ratio versus 1:1 in the civilian sector, but this has little relevance to women's enlistment choice in regard to marriage variables. Compared with women who have no plans to marry within five years, women who *never* plan to marry are much more likely to enlist, whereas women who plan to marry within five years are less likely to enlist. Therefore, women enlistees do not appear to be drawn by the odds of marriage. Rather, as suggested in the literature, the male dominant gender ratio may raise apprehensions about discrimination and harassment and also affect attitudes toward enlistment. These factors would seem unimportant to women who "never" plan to marry but pertinent to women who would like to marry in the near term. For men, and again comparing with those who have no plans to marry within five years, men who never plan to marry are more likely to enlist—similar to women—whereas men who plan to marry within five years are also more likely to enlist—contrary to women. The latter result may reflect a realization that the military can offer good family benefits, particularly health care, in addition to providing a foundation of skill and experience for postservice employment. Finally, women who are or have been married (i.e., ever married) are less likely to enlist, whereas ever married men are more likely.

The presence of children has no effect on graduate male enlistment, but a significantly negative effect for both female seniors and graduates. (The variable was not specified for male seniors because so few had children.) Because single women with children and married women with more than one child were dropped from the nonenlisted sample due to ineligibility, the "has child" variable represents "married with a child." Among seniors, then, it appears that the presence of a child in marriage, but not marriage itself, affects the enlistment probability. On the other hand, marriage has a strong negative effect for graduate females, and the presence of a child increases the magnitude of that effect. A child demands a great deal of a young mother's time, increasing the opportunity cost of employment—civilian or military.

For seniors it is once more true that persons who never plan to marry are the most likely to enlist. The only other statistically significant result is that male seniors who plan to marry within five years are also more likely to enlist, comparable with the finding for male graduates.

The one variable related to eligibility has a negative effect, as expected. Persons scoring in AFQT Category IV (10th through 30th

percentiles) are less likely to enlist. Although technically eligible for service, these people will be excluded from occupations with high verbal or quantitative aptitude requirements and may choose not to enter others. Furthermore, recruiters, operating under guidance to enlist higher quality personnel, will devote more effort to persons with higher AFQT scores.

The employment variables include employment status, wage rate if currently employed,⁶ tenure on current job, weeks since last job (if not currently employed and had a job within the past 12 months), current hours of work, and hours of work on past job.

The wage variable for seniors is not significant. Their current wage may be a poor measure of earning capacity because of the casual and short-term nature of many after school jobs. However, even though seniors' enlistment is unrelated to their current wage if employed, it is reasonable to expect seniors' expectations about future wage and employment opportunities to be relevant. We do not have data on these future opportunities and cannot test that proposition, but, as discussed shortly, the enlistment equation for graduates amply demonstrates their sensitivity to wage and employment variables. Presumably, the graduates' wage and employment variables are a reflection of what seniors might anticipate in the labor market. This is not to say that the seniors' response to expected future wage and employment variables equals the graduates' observed effects, but only that the absence of any senior response to current wage does not mean they would be indifferent to their economic prospects.

Seniors who work longer hours on their current job have higher enlistment probabilities. The longer hours may signal an intent to enter the labor market or the military after high school rather than going to college. Tenure has a negative effect for male seniors, indicating a developing attachment to an employer, but tenure is not significant for female seniors. Thus, tenure works against the hours effect for male seniors but not for female seniors. Broadly speaking, variables indicating current joblessness, months of joblessness, and no job in the past 12 months are not significant for male or female seniors. But there is some evidence that male seniors who are jobless and come from high unemployment counties are more likely to enlist if they have

⁶We also tried a specification that included as a separate variable the wage at the last job for those not currently employed. Among seniors, wage at last job had a positive effect on enlistment for those who were not currently employed. This effect suggests that past wage acts more as a selector variable for those interested in the military and not college bound, rather than as a yardstick for forgone earnings. Among graduates, there is basically no effect of wage at last job on the enlistment of those not currently employed.

been jobless a long time. This is implied by the positive interaction between the number of months jobless and local unemployment rate, and shows that an individual's evaluation of his own condition here depends on market employment conditions.

For graduates, the wage variable appears highly significant and practically identical for men and women. The coefficients imply that both sexes have a wage elasticity of -1.0 : a 1 percent increase in civilian wage reduces the enlistment probability by 1 percent.⁷ Moving from a \$5.00/hour to a \$5.50/hour job would reduce the enlistment probability by 10 percent, clearly a large impact.

Hours of work and tenure effects are negative and significant for graduate men but small and insignificant for women, findings consistent with men having better job matches than women, as suggested above. Jobless persons who had worked longer hours and therefore experienced a larger wage loss because of their joblessness are more likely to enlist. Also, the longer a person has been jobless the more likely he or she will enlist, particularly if the county unemployment rate is high. These unemployment influences tend to be considerably stronger for men than women.

The race/ethnicity variables show a sharp distinction between blacks versus Hispanics and whites. In all cases, a black person has a higher enlistment probability than a white, whereas an Hispanic's probability statistically equals a white's. Thus, even after controlling for many individual and market characteristics, blacks find military service attractive. Interestingly, this is very much a micro-level result. The same equation shows that the higher the *percentage* of blacks in the county the *lower* the individual's probability of enlistment. Indeed, if an aggregate enlistment model used the percentage of blacks to represent an individual black's willingness to enlist, other things constant, the model could produce a wholly misleading result.

Why should percentage black have a negative effect? We cannot say for sure, but based on our theory we suspect that either the costs (recruiter effort per recruit) are higher in such counties or recruiting goals have been set lower. We do not have corroborative evidence on costs but can suggest a link between goals and eligibility. Assuming recruiting commands want to recruit the highest attainable quality mix

⁷This wage elasticity is similar to those from aggregate-level studies, which frequently lie in the range of -0.5 to -1.0 . For example, Cotterman (1986) estimated an elasticity of -0.5 ; Brown (1985), depending on the time period of his data, had estimates of -0.6 to -0.97 ; Ash et al. (1983) found an elasticity of -0.8 ; Dertouzos (1985) estimated -1.0 for 1980 and -0.7 for 1981; and Dale and Gilroy (1984) found a value of -0.9 . These aggregate elasticities are based on pooling both seniors and graduates; thus the relatively zero wage effect of seniors would tend to result in a lower estimated wage elasticity than for graduates alone.

given their recruiting resource budgets, they may expect a higher payoff from counties having a lower percentage black, hence more eligibles. Relatively higher goals would be allocated to such counties. Evidence relating the percentage black to eligibility for service and occupations comes from the 1980 administration of the ASVAB to a national sample of youth, the National Longitudinal Survey. (We use the 1979 wave of the NLS but draw the AFQT score from the 1980 wave.) The results, published as *Profile of American Youth* (1982), reveal widespread disparity in average scores. According to Table C-2 of *Profile*, high school graduates ages 18-23 in 1980 had the following averages: whites, 65th percentile; Hispanics, 39th percentile; blacks, 22nd percentile. On this account, counties with high proportions of blacks, and less so Hispanics, can be expected to contain higher proportions of persons ineligible for service or particular occupations.

Accordingly, in counties having a higher percentage black, any individual's probability of enlistment—black, white, or Hispanic—would be lower because of the presumably lower goals, or as mentioned, higher costs. This agrees with our findings. For Hispanics, one would expect a weaker effect because they are closer to whites in their eligibility; the results in fact are not statistically different from zero.

We expected recruiter density to have a positive effect. It does, although the effect is small. This may occur because of inaccuracies in recruiter counts, which would cause an errors-in-variable problem likely to bias the coefficient toward zero.

We included the "senior and recent graduate" variable (current year and previous year seniors as a percentage of county population ages 15-24) to approximate the difficulty of making contact with a prospect. Search costs are lower in high schools because the population is localized and names and phone numbers can be obtained easily. Recruiters in such markets should devote more effort to recruiting seniors and recent graduates and less effort to other graduates. Graduates' results conform to this view: the greater this variable the lower a graduate's enlistment probability. Interestingly, seniors also have a negative effect, although it is far smaller. The results for seniors suggest that these markets had slack, and the recruiting goals probably could have been set slightly higher.

The remaining local market variables include county per capita income in 1979, the change in county per capita income from 1979 to 1980, and the percentage of women in the county's labor force. We assume higher per capita income counties possess better employment and earnings opportunities. Per capita income therefore provides a macro indicator of the market's recruiting difficulty; high per capita income signals high marginal effort per recruit. In addition, recruiting

goals might be set lower. Higher marginal cost and lower goals should result in a lower chance that any particular person in the market will be recruited, holding constant recruiter density.

We find a negative relationship between per capita income and enlistment for graduates. The same relationship holds for male seniors but not female seniors. Similarly, the change in per capita income from the current year to the next represents improving or worsening local economic conditions. The results indicate that growing per capita income reduces enlistment probability in the current year, although the coefficients are of mixed statistical significance.

The percentage of women in the county's labor force focuses attention on the degree of labor market competition faced by youths with little work experience or job tenure. Because women typically have less labor market experience than men of a given age, we expect women to be closer substitutes for youth than are men. Therefore, a higher percentage of women should reflect a more competitive labor market for youth—more applicants per job opening, lower wages, and a greater likelihood of being dismissed. By implication, the military would be relatively more attractive. Our results are consistent with this interpretation. The effect of percentage of women on the enlistment probability is always positive, and three of the four coefficients are significant.

TESTS OF EQUALITY BETWEEN SETS OF COEFFICIENTS

Given that individual variable effects are often statistically equivalent between males and females, we now examine whether *sets* of coefficients (i.e., the overall coefficient structures) are equivalent between the two groups. We performed a series of likelihood ratio tests for various sets of coefficients. The likelihood ratio (the ratio of the log likelihood of the restricted equation to the log likelihood of the unrestricted equation) when multiplied by -2 is distributed chi-square with degrees of freedom equal to the number of restrictions imposed. In this case, the unrestricted equation is a regression pooling men and women where all the coefficients are allowed to differ between the sexes, the restricted equation is a pooled regression where designated coefficients are forced to be the same between men and women, and the degrees of freedom equal the number of coefficients restricted to be the same between the sexes. If the test statistic is significant, then the hypothesis that the *set of coefficients* is the same is rejected.

We ran four different restricted regressions. In each regression a female intercept and the local labor market variable female interactions were included to account for the difference in accession goals and recruiting effort between men and women. Regression (1) contained no other female interactions but those just mentioned, regression (2) added only interactions between the marriage variables and the female indicator, regression (3) added only female interactions among the work variables, and the last regression (4) added both the marriage and work variable female interactions. Results from the individual variable tests suggested that marriage and work variables were the most likely to differ between men and women with respect to their effect on enlistment behavior. If those variables were mainly responsible for the structural differences between men and women, we might expect that lifting the restrictions of equality on those factors would show that the remaining set of variables is not statistically different between the two groups. As seen in Table 5.3, although the inclusion of those interactions and no others among the individual-related variables did reduce the test statistic, the statistic was still significant.

The likelihood ratio test, however, is a weak test for equality of sets of coefficients as it looks at whether the *entire* set of coefficients is pairwise equal between men and women. If one or two variables are significant, then the test will reject the equality hypothesis, which is indicative of the results shown in Table 5.3. Among seniors, where the

Table 5.3

JOINT TESTS FOR EQUALITY OF SETS OF COEFFICIENTS

Specification	Seniors		Graduates	
	Chi-Square	DF	Chi-Square	DF
1. No interactions among person-level variables	107.1	29	196.5	33
2. Marriage interactions only	71.1	27	108.7	29
3. Work interactions only	85.0	17	167.7	21
4. Marriage/work interactions	48.5	15	70.0	17

NOTES: All of the tests are significant at the .005 level.

The Chi-Square test statistic in the table is the difference between the chi-square for the fully interacted model and the restricted equation.

DF refers to the number of coefficients restricted to be the same for men and women, which is the difference between the degrees of freedom in the fully interacted model and the restricted equation.

structures qualitatively appear the same, significant differences between the sexes in the effects of race and mother's education on enlistment behavior explain the rejection of equality of the remaining coefficients in the last test where marriage and work variables are allowed to differ between men and women. For graduates, it was not surprising that the equality test failed since there are several remaining variables that have differential effects between men and women: live with parents, black, age, number of siblings, and had some postsecondary schooling. Thus, although sets of coefficients differ, we still would emphasize overall the many coefficient-by-coefficient similarities.

VI. CONCLUSION

A variety of conclusions emerge from our study. Perhaps the central finding is that men's and women's enlistment equations are similar in many ways. Many of the same variables are important for both, often with nearly equivalent quantitative effects. We find this despite the nontraditional nature of military service as an occupation for women, and despite the prevalent concern about major differences inherent in recruiting women: lower accession goals, tighter eligibility standards, and diminished availability of military occupational specialties relative to men.

Given this similarity, the enlistment incentives, recruiting techniques, and advertising strategies that work for men are likely to be effective in an expanded campaign to recruit women. That is, our findings provide a basis on which to proceed should higher recruiting goals be set for women.

In terms of the agreement between theory and results, our work affirms the value of considering enlistment in the context of occupational choice, explicitly incorporating the role of recruiter effort, and employing micro data as a means of mitigating the demand constraint problem.

Because we cannot identify the women's enlistment supply curve intercept and because the supply coefficients might include some effects of recruiter influence, we cannot say how many women would have enlisted had women's accession goals been greater. But our model could help in designing a low-cost recruiting experiment to learn more about potential supply. For instance, women's recruiting goals could be substantially increased in some areas and reduced in others, leaving the overall goal unaffected. The cost of this sort of experiment would be largely limited to research and administrative expenses, including experimental design, data collection, and analysis on the one hand, and the appropriate reassignment of recruiters or readjustment of recruiter's goals on the other. It would not be necessary to spend more on enlistment incentives such as bonuses or expanded educational benefits, but that could be done if estimates of the effects of these incentives on women's enlistment were desired.

Although the recruiting community commonly keeps track of enlistment intentions measures, other measures should probably be tracked as well. While recognizing that enlistment intentions are valid predictors of subsequent enlistment, we caution against sole reliance on

intentions. They are not a perfect predictor of enlistment and, judging from our work, are affected by other factors that can change the distribution of people into various intentions categories and their enlistment rate given the category. Few women (around 10 percent) have positive intentions to enlist and in fact most female recruits come from the *negative* intentions group. Our study has identified factors influencing the enlistment behavior of both the positive and the negative intentions group. Our results suggest that it may be useful to monitor youth employment conditions, wage rate, family income, education expectations, and marriage plans, and one could add the availability of financial aid for postsecondary education as well as an index of tuition costs.

The many significant explanatory variables in our women's (and men's) enlistment model imply a capability to discriminate the more likely enlistment prospects from the less. The recruiter, in deciding how to allocate his effort across markets and selecting which prospects to pursue, can benefit from an underlying knowledge of individual enlistment decisionmaking. Our work provides a step in that direction. It suggests that relevant information about a prospect would include plans for education, academic ability, ability to finance further schooling, marital status and marital plans, employment status, job tenure, hours of work, duration of joblessness, and current wage rate. The latter, for example, has a sizable effect on graduates' enlistment probability, with a 10 percent increase in civilian wage rate bringing a 10 percent reduction in the probability. We now see that this wage effect is the same for women as for men. At the same time, we find no significant wage effects for seniors, probably because of the more casual, short-term nature of their jobs.

Finally, the county-level variables in our analysis suggest that a local market's recruiting richness will depend on per capita income, unemployment rate, relative number of seniors and recent graduates, percent black, and the labor force participation rate of women. Several of these variables could add to the explanatory power of aggregate data models. These models generally include the unemployment rate but to our knowledge have not included the others.

Appendix A

GLOSSARY OF VARIABLES

1. Age when a high school senior

Age of the individual when a senior in high school. Entered as two indicator variables for age 17 and for age 19 and over, with age 18 as the comparison or leftout group. In the graduate sample, those who received a GED and left high school before age 17 have no age value for when they were a senior because they never were a senior. The GED variable controls for their lack of an "age when senior" variable. Those with more than 12 years of schooling also do not have a value for age when a senior, because the AFEES survey (enlisted sample) has no information on when an individual last attended high school if he has postsecondary schooling. An indicator variable for postsecondary schooling controls for this situation.
2. AFQT percentile

Percentile score of the (correctly normed) Armed Forces Qualification Test (AFQT), based on the 1979 ASVAB (Armed Services Vocational Aptitude Battery) for the AFEES (enlisted sample) and on 1980 ASVAB scores for the NLS (nonenlisted sample). This variable is zero for those with AFQT percentile scores of 10 to 30 (Category IV). The Category IV indicator variable controls for these zero values. Individuals with percentile scores of less than 10 (Category V) were excluded from the data because such individuals are not eligible to enlist.
3. Lives at home

Indicator for whether the individual still lives with parents or guardians.

4. Family income Parental income in dollars if the individual lives with his parents. Values represent midpoints of income ranges that define the income category associated with the individual. The value of this variable is zero if the parental income is below \$5200 a year (the lowest income category); the "low income" indicator variable controls for these zero values. If the individual does not live with his parents, the value of parental income is zero. Parental income is only available for those who still lived with their parents at the time of the interview.
5. Number of siblings Number of brothers and sisters the individual has regardless of whether they still live at home.
6. Expects more education Indicator for whether the individual's expected years of schooling exceed the number of years he has already completed.
7. Mother's education Years of schooling attained by the individual's mother.
8. Some postsecondary schooling Indicator of whether the individual has completed more than 12 years of schooling; applicable only to the graduate sample.
9. Months since last attended school Natural log of the number of months since the individual was last enrolled in school—high school or college; applicable only to the graduate sample.
10. Hourly wage Natural log of hourly wage the individual receives at his current job. The variable is zero if the individual is not currently employed. In the senior sample, the value of this variable is zero for those with an hourly wage of less than \$2.25/hour, as are all of the employment-related variables. Seniors with such extremely low hourly wages are anomalies and have been effectively

- removed from the estimation of the wage effect by zeroing out their values and including an indicator for such low wages.
11. Weekly hours, if currently employed Number of hours per week the individual works if he is working at the time of the survey. (Individuals from the AFEES survey were considered to be currently working if they had left their job within the last month but were not currently employed when they took the AFEES survey.) Variable is zero if not currently employed.
 12. Months on job, if currently employed Natural log of the number of months the individual has been working on his current job. The value of this variable is zero if the individual is not currently employed.
 13. Worked in past year, not currently employed Indicator for whether the individual had a job within the last 12 months but is not currently working.
 14. Weekly hours, not currently employed Number of hours per week the individual worked at his last job if not currently working but had a job within the last 12 months. Value of variable is zero if currently employed.
 15. Months not employed Number of months since the individual's last job if he is not currently employed but had worked within the last 12 months. Value of variable is zero if currently employed.
 16. Not employed within past year Indicator for whether individual did not have a job during the last 12 months.
 17. Ethnic group—black Indicator for whether the individual is black.
 18. Ethnic group—Hispanic Indicator for whether the individual is Hispanic.
 19. AFQT Category IV Indicator for whether the individual's AFQT percentile was in the 10-30 range.

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|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20. GED | Indicator for whether the individual left high school before age 17 and later received a Certificate of General Education Development; applicable only to the graduate sample. |
| 21. Has children | Indicator for whether individual has any children. |
| 22. Ever married | Indicator for whether individual is now or has ever been married. |
| 23. Plans never to marry | Indicator for whether individual does not plan to get married ever. |
| 24. Plans to marry in five years | Indicator for whether individual expects to be married within the next five years. |
| 25. Mother worked when respondent was age 14 | Indicator for whether the individual's mother worked outside the home when the individual was age 14. |
| 26. Share of seniors and recent high school graduates in local market | Proportion of male youth population aged 15-24 in the MEPS (Military Entrance Processing Station) area who are high school seniors or graduated from high school in the previous year. Population figures are for 1978. (Descriptions of these population counts are provided in Hosek and Peterson, 1985.) |
| 27. Recruiter density | Recruiter density within a MEPS is defined as the number of production recruiters per male aged 15-24 in the MEPS. The number of recruiters per MEPS was provided by the Defense Manpower Data Center and is for the spring of 1979. |

The following county-level data were extracted for the County Statistics File produced by the Bureau of the Census.

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| 28. Unemployment rate | Total unemployment rate in 1979 for the county of residence. Figures are from the Bureau of Labor Statistics based on Current Population Survey (CPS) data. |
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|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 29. Percentage black | Percent of county's total population who are black. Figures based on 1980 census. |
| 30. Percentage Hispanic | Percent of county's total population who are Hispanic. Figures based on 1980 census. |
| 31. Percent of labor force female | Percent of county's total civilian labor force in 1980 who are women. Figures from Bureau of the Census. Civilian labor force includes employed and unemployed civilians ages 16 and above. |
| 32. Per capita personal income | Per capita personal income in 1979 for the county, in thousands of dollars. Figures are from the Bureau of Economic Analysis. Personal income is current income received from all sources, less social security taxes. Total personal income for the county is divided by the resident population to get per capita personal income. |
| 33. Percent change in per capita personal income | Percent increase or decrease in real per capita personal income between 1978 and 1979 in the county. 1978 income was converted to 1979 dollars for calculation of this variable. |
| 34. Unemployment rate and personal unemployment | Three variables were created to examine the interaction of local unemployment conditions with the individual's own unemployment situation. Interactions were made separately between the county unemployment rate in 1979 and the following three individual unemployment variables: not currently working but worked in last 12 months, has not worked in last 12 months, and number of months not employed. |

The following variables were included in the regression specifications as controls for missing variables or for unusually low values:

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| 35. Lowest family income | Indicator for whether parental income was under \$5,200 a year if the individual lived with his parents. We view these low income values as aberrations and |
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chose to control for them separately to get a more accurate estimate of the effect of family income.

36. Wage less than \$2.25/hour Indicator for whether the individual's hourly wage was less than \$2.25. This variable is applicable only to the senior sample. All the employment variables in the senior equation are zero when this variable is equal to one.
37. Family income missing Indicator for whether information on parental income was missing if the individual lived with his parents. The values for parental income and lowest income group are zero when this variable is equal to one.
38. AFQT missing Indicator for whether information on the individual's AFQT percentile was missing. The values of AFQT and lowest AFQT category are zero if this variable is equal to one.
39. Wage missing Indicator for whether the individual's current hourly wage is missing.

Except for AFQT, family income, and hourly wage, missing values were replaced with the sample means relative to each choice. Individuals lacking information on student status, level of education, or employment status were excluded from the analysis. Table A.1 provides the sample sizes.

Table A.1

CHOICE-BASED SAMPLE SIZES

	Males		Females	
	Nonenlistees	Enlistees	Nonenlistees	Enlistees
Seniors	410	2815	354	755
Graduates	763	2721	719	1110

Appendix B

MEANS AND STANDARD DEVIATIONS FOR SENIORS AND GRADUATES: BY SEX AND ENLISTMENT STATUS (WEIGHTED)

Table B.1

SENIOR MEANS AND STANDARD DEVIATIONS BY SEX AND ENLISTMENT STATUS

Variable	Male Nonenlistees	Male Enlistees	Female Nonenlistees	Female Enlistees
Age 17 when senior	0.52489 (0.49994)	0.35738 (0.47931)	0.66070 (0.47413)	0.40778 (0.49174)
Age 19 or more when senior	0.05372 (0.22573)	0.12589 (0.33178)	0.01583 (0.12501)	0.10402 (0.30549)
AFQT score (31-99)	66.35617 (19.18113)	59.02343 (18.73143)	64.20577 (19.42908)	55.69423 (16.45060)
Lives at home	0.94931 (0.21961)	0.90687 (0.28783)	0.95439 (0.20893)	0.85990 (0.34732)
Family income (in \$ thousands)	25.51773 (13.08299)	19.39789 (10.80651)	24.51486 (12.50589)	17.99741 (10.34553)
Number of siblings	3.05107	3.75698	2.98490	4.06003
Expects more education	0.62611 (0.48424)	0.49660 (0.48802)	0.71170 (0.45342)	0.57569 (0.47632)
Mother's years of schooling	12.03124 (2.51951)	11.90873 (1.28436)	12.08550 (2.35252)	11.38621 (1.54059)
Hourly wage (natural log)	1.15214 (0.18015)	1.14377 (0.16234)	1.09412 (0.13146)	1.10726 (0.12206)
Hourly wage	3.21675 (0.66235)	3.18707 (0.63720)	3.01394 (0.46220)	3.05217 (0.43750)
Weekly hours, currently employed	18.47808 (13.51275)	26.93785 (12.08254)	16.17152 (10.91404)	20.40880 (12.15377)
Months employed (natural log)	1.77289 (1.31586)	1.81571 (1.21004)	1.49668 (1.14355)	1.56158 (1.15123)
Months employed (actual number)	12.18005 (18.01359)	11.57349 (13.77769)	7.90091 (10.30345)	8.37782 (8.89678)
Not currently employed	0.24852 (0.43265)	0.23874 (0.42639)	0.21036 (0.40814)	0.23816 (0.42624)

Table B.1—continued

Variable	Male Nonenlistees	Male Enlistees	Female Nonenlistees	Female Enlistees
Weekly hours, not currently employed	29.91007 (13.91538)	32.96995 (11.30934)	23.94223 (11.89052)	28.26726 (10.47739)
Months not employed	5.06155 (2.75088)	5.69368 (2.70496)	5.43568 (3.04865)	6.35420 (2.82525)
Not employed in last 12 months	0.11163 (0.31526)	0.21948 (0.41397)	0.15395 (0.36141)	0.30709 (0.46159)
Black	0.11241 (0.31129)	0.23809 (0.42494)	0.10186 (0.29748)	0.29141 (0.45361)
Hispanic	0.04924 (0.21334)	0.05826 (0.23371)	0.04843 (0.21113)	0.05289 (0.22341)
Category IV indicator	0.24337 (0.42917)	0.29118 (0.45190)	0.20246 (0.40105)	0.33634 (0.46400)
Wage < \$2.25/hour	0.10388 (0.30545)	0.02405 (0.15324)	0.09804 (0.29779)	0.06275 (0.24268)
Has children	0.00794 (0.08887)	0.01653 (0.11556)	0.00594 (0.07696)	0.00409 (0.06029)
Ever married	0.00000 (0.00000)	0.00867 (0.09189)	0.02283 (0.14957)	0.01843 (0.13411)
Plans never to marry	0.02307 (0.14649)	0.08589 (0.23312)	0.00863 (0.09056)	0.07845 (0.23221)
Plans to get married in next 5 years	0.37907 (0.47305)	0.62191 (0.40340)	0.53530 (0.48804)	0.56614 (0.42400)
Mother worked when respondent was age 14	0.51090 (0.49678)	0.60243 (0.32029)	0.56373 (0.49429)	0.64082 (0.32941)
Share of seniors and recent graduates (proportion)	0.14851 (0.01878)	0.14459 (0.01865)	0.15196 (0.01721)	0.15011 (0.01601)
Recruiter density (per thousand population)	0.00052 (0.00006)	0.00052 (0.00007)	0.00053 (0.00006)	0.00052 (0.00006)
Unemployment rate in county	6.02586 (1.94535)	6.07644 (1.72874)	5.99172 (1.79219)	6.21518 (1.89466)
Percent of county population that is black	0.11573 (0.12324)	0.11592 (0.12146)	0.11287 (0.12227)	0.10867 (0.12287)
Percent of county population that is Hispanic	0.05747 (0.09368)	0.05792 (0.09705)	0.05504 (0.10583)	0.05802 (0.10042)

Table B.1—continued

Variable	Male Nonenlistees	Male Enlistees	Female Nonenlistees	Female Enlistees
Percent of county labor force that is female	41.43917 (3.07076)	41.69546 (2.71729)	41.68084 (2.67449)	41.70618 (2.44589)
Per capita personal income in county	8.76940 (1.68407)	8.24338 (1.56054)	8.60279 (1.70808)	8.29980 (1.54824)
County unemployment rate × not currently employed	1.47060 (2.70242)	1.47206 (2.56198)	1.19120 (2.43744)	1.44564 (2.47682)
County unemployment rate × not employed in last 12 months	0.69854 (2.09210)	1.34114 (2.50511)	1.01995 (2.53265)	2.02989 (2.97073)
County unemployment rate × months not employed	7.33091 (15.80873)	9.89093 (19.20067)	6.66613 (16.22254)	9.54046 (17.99108)
Percent change in per capita personal income from previous year	0.39232 (2.03532)	0.03878 (1.99431)	0.22513 (2.20866)	0.07833 (2.05859)
Family income < \$5200	0.02498 (0.15626)	0.07175 (0.25812)	0.03220 (0.17678)	0.08032 (0.27197)
Family income missing	0.17142 (0.37731)	0.21043 (0.40769)	0.19820 (0.39921)	0.21759 (0.41288)
AFQT score missing	0.06794 (0.25194)	0.13568 (0.34251)	0.02638 (0.16050)	0.22070 (0.41499)
Hourly wage missing	0.21135 (0.42659)	0.14703 (0.35118)	0.20226 (0.41076)	0.13795 (0.33914)

Table B.2

GRADUATE MEANS AND STANDARD DEVIATIONS BY SEX AND
ENLISTMENT STATUS

Variable	Male Nonenlistees	Male Enlistees	Female Nonenlistees	Female Enlistees
Age 17 when senior	0.39249 (0.48862)	0.32356 (0.46792)	0.43801 (0.49648)	0.34986 (0.47714)
Age 19 or more when senior	0.08022 (0.27182)	0.09156 (0.28346)	0.03898 (0.19370)	0.07319 (0.26057)
AFQT score (31-99)	64.43062 (17.89624)	62.61447 (18.92610)	62.22435 (18.36090)	57.12940 (17.85443)
Lives at home	0.68914 (0.46314)	0.70546 (0.45591)	0.49437 (0.50031)	0.67584 (0.46826)
Family income (in \$ thousands)	21.80937 (12.73328)	20.27571 (11.60641)	23.52268 (12.59792)	18.42568 (10.79502)
Number of siblings	3.22875 (2.06928)	3.65243 (1.56988)	3.27823 (1.90002)	4.05786 (1.64906)
Expects more education	0.41765 (0.48918)	0.65140 (0.45846)	0.42096 (0.49400)	0.67560 (0.44865)
Mother's years of schooling	11.66821 (2.35682)	11.94029 (1.25255)	11.56842 (2.48445)	11.75882 (1.47247)
Months since last school (natural log)	2.85121 (0.79045)	2.36844 (1.14322)	2.78607 (0.96378)	2.44253 (1.09982)
Months since last school (actual number)	22.07879 (13.77690)	16.43483 (13.10945)	22.34288 (14.48811)	17.53151 (14.00620)
Hourly wage (natural log)	1.51891 (0.36732)	1.34740 (0.29744)	1.27388 (0.27201)	1.18196 (0.23108)
Hourly wage	4.86740 (1.82338)	4.03728 (1.37104)	3.71709 (1.16166)	3.35385 (0.85632)
Weekly hours, currently employed	42.32221 (10.20064)	40.13834 (9.51583)	36.22857 (8.64472)	35.29843 (9.97213)
Months employed (natural log)	2.22572 (1.24687)	1.89145 (1.24132)	1.99143 (1.24662)	1.79948 (1.17205)
Months employed (actual number)	17.56934 (22.44094)	12.93694 (15.87058)	13.29616 (14.10172)	10.87617 (12.70050)
Not currently employed	0.10491 (0.30664)	0.25592 (0.43646)	0.14499 (0.35234)	0.25455 (0.43580)
Weekly hours, not currently employed	37.42517 (11.16807)	39.40227 (10.63179)	33.67622 (13.09433)	35.48291 (9.87954)

Table B.2—continued

Variable	Male Nonenlistees	Male Enlistees	Female Nonenlistees	Female Enlistees
Months not employed	2.76197 (2.42021)	5.34656 (2.98001)	4.07980 (3.30228)	5.47856 (3.04646)
Not employed in last 12 months	0.02145 (0.14498)	0.16804 (0.36484)	0.08212 (0.27474)	0.19553 (0.39679)
Black	0.08885 (0.27646)	0.25777 (0.43678)	0.07693 (0.26058)	0.31896 (0.46604)
Hispanic	0.04148 (0.19334)	0.04359 (0.20392)	0.04482 (0.20218)	0.04521 (0.20775)
Category IV indicator	0.21398 (0.41076)	0.28594 (0.44987)	0.20707 (0.40647)	0.28419 (0.44969)
Some post-HS education	0.14451 (0.35184)	0.16863 (0.36540)	0.22769 (0.41976)	0.18426 (0.38787)
GED	0.04297 (0.20283)	0.07868 (0.26559)	0.06484 (0.24607)	0.08358 (0.27191)
Has children	0.08415 (0.27727)	0.07164 (0.23950)	0.13226 (0.33855)	0.03491 (0.17188)
Ever married	0.13198 (0.33869)	0.09333 (0.28942)	0.33060 (0.47075)	0.13246 (0.33809)
Plans never to marry	0.02643 (0.15630)	0.07060 (0.21862)	0.00880 (0.09144)	0.10019 (0.26254)
Plans to get married in next 5 years	0.54609 (0.48456)	0.60798 (0.41619)	0.53015 (0.48843)	0.55177 (0.43326)
Mother worked when respondent was age 14	0.49787 (0.49691)	0.56257 (0.32361)	0.49605 (0.49831)	0.57689 (0.31937)
Share of seniors and recent graduates (proportion)	0.15122 (0.01810)	0.14183 (0.01746)	0.15262 (0.01705)	0.14773 (0.01523)
Recruiter density (per thousand population)	0.00053 (0.00006)	0.00051 (0.00006)	0.00053 (0.00006)	0.00052 (0.00007)
Unemployment rate in county	6.05393 (1.96930)	6.08694 (1.82699)	5.99111 (1.86262)	6.13275 (1.68419)
Percent of county population that is black	0.10790 (0.12536)	0.13034 (0.12211)	0.11803 (0.13347)	0.12887 (0.12170)

Table B.2--continued

Variable	Male Nonenlistees	Male Enlistees	Female Nonenlistees	Female Enlistees
Percent of county population that is Hispanic	0.04846 (0.08201)	0.05493 (0.10093)	0.04716 (0.07959)	0.06166 (0.09494)
Percent of county labor force that is female	41.53013 (2.96987)	41.70835 (3.19925)	41.67927 (3.03511)	41.95222 (2.55771)
Per capita personal income in county	8.76959 (1.66709)	8.34198 (1.60164)	8.73810 (1.58793)	8.44914 (1.51698)
County unemployment rate \times not currently employed	0.66680 (2.07176)	1.60904 (2.76921)	0.89591 (2.28077)	1.69051 (2.64456)
County unemployment rate \times not employed in last 12 months	0.14859 (1.05880)	0.96192 (2.17825)	0.56531 (2.00796)	1.26589 (2.42056)
County unemployment rate \times months not employed	1.85820 (8.17787)	8.64475 (17.78880)	3.67836 (12.45626)	9.45719 (17.85242)
Percent change in per capita personal income from previous year	0.20624 (2.29442)	0.08346 (2.29441)	0.29883 (1.94728)	-0.04005 (2.12239)
Family income < \$5200	0.06492 (0.24654)	0.04677 (0.21119)	0.03015 (0.17113)	0.06343 (0.24384)
Family income missing	0.15682 (0.36387)	0.17162 (0.57712)	0.13298 (0.33979)	0.16817 (0.37418)
AFQT score missing	0.10729 (0.30969)	0.12023 (0.32529)	0.04272 (0.20237)	0.15995 (0.36373)
Hourly wage missing	0.12287 (0.33715)	0.17068 (0.37571)	0.11931 (0.32853)	0.12820 (0.33361)

BIBLIOGRAPHY

- Ash, Colin, Bernard Udis, and Robert F. McNown, "Enlistment in the All-Volunteer Force: A Military Personnel Supply Model and Its Forecasts," *American Economic Review*, Vol. 73, No. 1, March 1983.
- Bachman, Jerald G., Lee Sigelman, and Greg Diamond, "Self-Selection, Socialization, and Distinctive Military Values: Attitudes of High School Seniors," *Armed Forces and Society*, Vol. 13, No. 2, Winter 1987, pp. 169-187.
- Behrman, Jere R., Robert A. Pollak, and Paul Taubman, "Family Resources, Family Size, and Access to Financing for College Education," *Journal of Political Economy*, Vol. 97, No. 2, April 1989.
- Binkin, Martin, and Shirley J. Bach, "Women and the Military," The Brookings Institution, Washington, D.C., 1977.
- Brown, Charles, "Military Enlistments: What Can We Learn from Geographic Variation?" *American Economic Review*, Vol. 75, March 1985.
- Buckley, Linda R., "Sixteen Personality Factors Study: Women at the Air Force Academy," *Proceedings of the First Service Academy Counseling Conference*, Colorado Springs, Colorado, 1977.
- Buddin, Richard, *Weight Problems and Attrition of High Quality Military Recruits*, The RAND Corporation, N-2847-FMP, June 1989.
- Bureau of the Census, *Statistical Abstract of the United States*, U.S. Government Printing Office, various years.
- Bureau of Labor Statistics, *Labor Force Statistics*, Bulletin 2307, U.S. Department of Labor, August 1988.
- Cotterman, Robert F., *Forecasting Enlistment Supply: A Time Series of Cross Sections Model*, The RAND Corporation, R-3252-FMP, July 1986.
- Dale, Charles, and Curtis Gilroy, "Determinants of Enlistments: A Macroeconomic Time-Series View," *Armed Forces and Society*, Vol. 10, No. 2, Winter 1984, pp. 192-210.
- Dertouzos, James N., *Recruiter Incentives and Enlistment Supply*, The RAND Corporation, R-3065-MIL, May 1985.
- Dertouzos, James N., J. Michael Polich, Anil Bamezai, and Thomas Chesnutt, *Recruiting Effects of Army Advertising*, The RAND Corporation, R-3577-FMP, January 1989.
- Devilbiss, M. C., "Gender Integration and Unit Deployment: A Study of GI Jo," *Armed Forces and Society*, Vol. 11, No. 4, Summer 1985, pp. 523-552.

- Dienstfrey, Stephen J., "Women Veterans' Exposure to Combat," *Armed Forces and Society*, Vol. 14, No. 4, Summer 1988, pp. 549-558.
- Dunivin, Karen O., "Gender and Perceptions of the Job Environment in the U.S. Air Force," *Armed Forces and Society*, Vol. 15, No. 1, Fall 1988, pp. 71-92.
- Durning, Kathleen P., *Women at the Naval Academy: The First Year of Integration*, Naval Personnel Research and Development Center, TR 78-12, San Diego, California, 1978.
- General Accounting Office, *Women in the Military: More Military Jobs Can Be Opened Under Current Statutes*, GAO/NSIAD-88-222, September 1988.
- Horne, David K., "The Impact of Soldier Quality on Army Performance," *Armed Forces and Society*, Vol. 13, No. 3, Spring 1987, pp. 443-456.
- Hosek, James R., and Christine E. Peterson, *Enlistment Decisions of Young Men*, The RAND Corporation, R-3238-MIL, July 1985.
- Hunter, Edna J., Sharon J. Rose, and J. Bradley Hamlin, "Women in the Military: An Annotated Bibliography," *Armed Forces and Society*, Vol. 4, No. 4, August 1978, pp. 695-716.
- Kanter, Rosabeth Moss, *Men and Women of the Corporation*, Basic Books, New York, 1977.
- Laurence, Michael T., *Enlistment Height/Weight Standards: Historical and Service Specific*, Defense Manpower Data Center, Arlington, Virginia, March 1987.
- Mangum, Stephen L., and David E. Ball, "Military Skill Training: Some Evidence of Transferability," *Armed Forces and Society*, Vol. 13, No. 3, Spring 1987, pp. 425-442.
- Manski, Charles F., and Steven R. Lerman, "The Estimation of Choice Probabilities from Choice Based Samples," *Econometrica*, Vol. 45, No. 3, November 1977.
- McFadden, D., "Conditional Logit Analysis of Qualitative Choice Behavior," in *Frontiers of Econometrics*, P. Zarembka (ed.), Academic Press, New York, 1973, pp. 105-142.
- National Center for Education Statistics, *Digest of Education Statistics, 1988*, U.S. Government Printing Office, Washington, D.C., 1988.
- Orvis, Bruce R., *Relationship of Enlistment Intentions to Enlistments in Active Duty Services*, The RAND Corporation, N-2411-FMP, September 1986.
- Perry, John, and John Swarts, "Female Market Analysis," Headquarters U.S. Army Recruiting Command, Fort Sheridan, Illinois, 1989.

- Profile of American Youth: 1980 Nationwide Administration of the Armed Services Vocational Aptitude Battery*, Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics), March 1982.
- Report to the House and Senate Committees on Armed Services, *Propensity of Young Women to Enlist in the Military*, prepared by Office of the Assistant Secretary of Defense (Manpower, Installations, and Logistics), March 1985.
- Rottman, Myrna, "Women Graduates of the U.S. Coast Guard Academy: Views from the Bridge," *Armed Forces and Society*, Vol. 11, No. 2, Winter 1985, pp. 249-270.
- Stanley, Sandra Carson, and Mady Wechsler Segal, "Military Women in NATO: An Update," *Armed Forces and Society*, Vol. 14, No. 4, Summer 1988, pp. 559-586.
- Stiehm, Judith Hicks, *Bring Me Men and Women: Mandated Change at the U.S. Air Force Academy*, University of California Press, Berkeley, 1981.
- Tan, Hong W., and Michael P. Ward, *Forecasting the Wages of Young Men: The Effects of Cohort Size*, The RAND Corporation, R-3115-ARMY, May 1985.
- Thomas, George W., "Military Parental Effects and Career Orientation Under the AVF: Enlisted Personnel," *Armed Forces and Society*, Vol. 10, No. 2, Winter 1984, pp. 293-310.
- U.S. Air Force, "An Analysis of Effects of Varying Male and Female Force Levels," Main Report and Annexes 1-5, Personnel Force Compensation Study, March 1985.
- U.S. Government, "The Role of Women in the Military," *Hearings Before the Subcommittee on Priorities and Economy in Government, Joint Economic Committee*, U.S. Government Printing Office, Washington, D.C., 1978.
- U.S. Government, "Women in the Military," *Hearings Before the Military Personnel Subcommittee of the House Committee on Armed Services*, November 13-16, 1979 and February 11, 1980, U.S. Government Printing Office, Washington, D.C., 1981.
- Waite, Linda J., and Sue E. Berryman, "Job Stability Among Young Women: A Comparison of Traditional and Nontraditional Occupations," *American Journal of Sociology*, Vol. 92, No. 3, November 1986.